DIMENSIONS OF RESTRUCTURING: STATE, CAPITAL AND LABOUR IN THE DEFENCE INDUSTRY IN SCOTLAND

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DEDICATIONS

To Jan, for your enduring support and care which I can barely begin to return.

For Kerrie and Natalie, in the hope that you both will see the day when what this is about passes into the realms of pre-history.

Signed declaration

This thesis has been composed in its entirety by the candidate.

Alexander Law

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LIST OF ABBREVIATIONS

AEI	Associated Electrical Industries
AEU	Amalgamated Engineering Union (now AEEU)
AEEU	Amalgamated Engineering and Electrical Union
AEW	Airborne Early Warning
AGM	Annual General Meeting
AIRPASS	Airborne Interceptor Radar and Pilot Attack Sight System
APEX	Association of Professional, Executive, Clerical and Computer Staff (now GMB)
ASTMS	Association of Scientific, Technical and Managerial Staffs (now MSF)
AUEW	Amalgamated Union of Engineering Workers (now AEEU)
AWAC	Airborne Early Warning System (See also AEW)
BAC	British Aircraft Corporation
BAe	British Aerospace
BRD	Babcock Rosyth Defence
BTL	Babcock Thorn EMI Ltd
CAD	Computer Aided Design
CAM-X	Computer Aided Manufacture
CBI	Confederation of British Industry
CED	Chief Executive Dockyards
CEGB	Central Electricity Generating Board
CFS	Chief of Fleet Support
CNC	Computerised Numerical Control
COMED	Combined Map and Electronic Display
CP	Communist Party
CSEU	Confederation of Shipbuilding and Engineering Unions
CVD	Directorate - Components, Valves and Devices
DATA	Draughtsmen and Allied Technicians Association
DE	*Defence Estimates* (annual)
DED	Docking and Essential Defects
DGSR	Director General of Ship Repair
DGST(N)	Director General of Stores and Transport (Naval)
DI	Dimensional Inspector
DIB	Defence Industrial Base
DM	Divisional Manager
DML	Devonport Management Limited
DoD	Director of Dockyards
DOGD	Defence Open Government Document
DP	*Dunfermline Press* (weekly)
DS	*Defence Statistics* (annual)
DSD	Display Systems Division (Ferranti)
EAP	Experimental Aircraft Programme
EC	European Community
ECR90	European Collaboration Radar for the 1990s

EE	English Electric
EEF	Engineering Employers Federation
EETPU	Electrical, Electronic, Telecommunication and Plumbing Union (now AEEU)
EFA	European Fighter Aircraft (now Eurofighter 2000)
EITB	Engineering Industry Training Board
ELDDI	Edinburgh and Lothian Defence Diversification Initiative
FCC	Financial Control Company
FDSL	Ferranti Defence Systems Limited (now GMav)
FFU	Ferranti Flying Unit
FIEL	Ferranti Industrial Electronics Limited
FMD	Facilities Management Division (Babcock International)
FMRO	Fleet Maintenance and Repair Organisation (Portsmouth)
F&O	Fabrication and Outfitting (Rosyth)
FOSL	Ferranti Offshore Systems Limited
FP	Financial Programming
FRC	Fife Regional Council
FT	*Financial Times* (daily)
FTAT	Furniture, Timber and Allied Trades Union
GDP	Gross Domestic Product
GE	General Electric (US)
GEC	General Electrical Company (UK)
GFDSL	GEC-Ferranti Defence Systems Limited (now GMav)
GGS	Gyroscopic Gun Sights
GM	General Manager
GMav	GEC-Marconi Avionics
GMB	General, Municipal and Boilermakers union
GRP	Glass Reinforced Plastic
GWU	General Workers Union (Malta)
HC	House of Commons (series)
HRM	Human Resource Management
ICRDB	Ironworkers, Caulkers, Riveters, Drillers, and Burners
ILP	Independent Labour Party
IPG	Industrial Products Group (Ferranti)
IPMS	Institute of Professionals, Managers and Supervisors
IR	Industrial Relations
IRC	Industrial Re-organisation Corporation
IRO	Industrial Relations Officer
ISC	International Signal and Control (US)
ISG	Information Systems Group (Ferranti)
ITAFO	Integration of Trades Agreement for Fabrication & Outfitting (Rosyth)
JIC	Just-In-Case
JIT	Just-In-Time
JOC	Joint Organising Committee

LGBS	Local Government Board for Scotland
MAP	Ministry of Aircraft Production
MD	Managing Director
MDSL	Marconi Defence Systems Limited
MED	Mechanical and Electrical Division (Rosyth)
MIC	Military Industrial Complex
MIE	Military Industrial Enterprise
MMC	Monopolies and Mergers Commission
MOD	Ministry Of Defence
MoS	Ministry of Supply
MRCA	Multi-Role Combat Aircraft
MRE	Military Research Establishment
MSF	Manufacturing, Science and Finance Union
NAO	National Audit Office
NATO	North Atlantic Treaty Organisation
NC	Numerically Controlled
NCB	National Coal Board
NEB	National Enterprise Board
NEFMO	NATO European Fighter Development, Production and Logistics Management Organisation
NES	Navigation and Electronic Systems Division (Ferranti)
NJCC	National Joint Consultative Council
PAC	Public Accounts Committee
PAS	Port Auxiliary Service
PBR	Payment-By-Results
PESTs	Professional Engineers, Scientists and Technicians
PRP	Performance Related Pay
PSTO(N)	Port Supplies and Transport Organisation (Navy)
PTO	Professional Technical Officer
RAF	Royal Air Force
RCG	Rotating Components Group (Ferranti)
RCNC	Royal Corps of Naval Constructors
R&D	Research and Development
RFA	Royal Fleet Auxiliary
RoCE	Return on Capital Employed
RoE	Return on Equity
ROF	Royal Ordnance Factory
RRD	Rosyth Royal Dockyard
SAL	Scottish Aviation Limited
SBAC	Society of British Aerospace Companies
SDA	Scottish Development Agency
SE	Scottish Enterprise
SFCS	Shop Floor Control System
SME	Small to Medium Enterprises

SMR	Stock, Manufacture and Repair
SNP	Scottish National Party
SSBN	Nuclear-powered ballistic missile submarine
SSN	Nuclear-powered fleet submarine
SSHA	Scottish Special Housing Association
STJC	Shipbuilding Trades Joint Council
STUC	Scottish Trades Union Congress
TASS	Technical, Administrative and Supervisory Section (of AUEW)
TGWU	Transport and General Workers Union
TIALD	Thermal Imager and Laser Designator
TID	Trials and Installation Division (Ferranti)
TS	Technical Supervisor
TSR-2	Tactical Strike and Reconnaissance aircraft
TUC	Trades Union Congress
TUPE 81	Transfer of Undertakings (Protection of Employment) Act 1981
UCATT	Union of Construction, Allied Trades and Technicians
VSEL	Vickers Shipbuilding and Engineering Limited

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ABSTRACT

This thesis examines changing relations in the defence industry. The defence industry is peculiar in important respects, not least because of the central role of the state in shaping the structure of the industry. During the Cold War excess capacity was preserved intact to meet state demands for armament technology and the defence industry was protected from the more general decline of manufacturing in Britain. With attempts to restructure the arms complex in Britain, the disturbance of decades of structural stasis allowed a study of industrial change in concentrated form. A leading edge military electronics firm, Ferranti (now GEC-Marconi), and a naval repair yard, Rosyth dockyard (now Babcock Rosyth Defence), were studied to understand the precise forms industrial change took and its historically contingent nature. Semi-structured interviews were conducted with key actors within the firms and primary and secondary documentary sources, including Parliamentary papers, consulted.

The first part of the thesis sets out the general field of study, considering general questions of restructuring and the nature of the defence industry. The historical pattern of defence industry in Scotland is also discussed. Traditional warshipbuilding was joined by advanced electronics capacity during the Cold War when Scotland became a strategic location for military support and production activities. Part two contains the case study material. The historical development of each firm in its external relation to the state and internal workplace relations is set out. Experiences of restructuring are considered next, taking into account the impact of privatisation, marketisation and changing products markets. Changing contours of the workforce and worker resistance to and compliance with restructuring is discussed. Part three then interprets the case studies within a wider Marxist political economy. Each attempted 'solution' contains the seeds of a new problem. First, state-capital relations continue to be marked by the idea of 'strategic' capitals within a nationally-based industrial complex. After forty years of Cold War stasis, which supported a capital-widening accumulation strategy, restructuring marks a return to more frequent disturbances to industrial structures and a capital-narrowing strategy as state capitals attempt to manage uncertainty in the mediation of local-national-global tensions. Secondly, workplace 'citizenship' constrained management autonomy during the permanent arms economy. Restructuring places renewed emphasis on commodification as an impersonal disciplining force. Within this context firms are caught between contradictory demands in commodifying work relations: to make living labour redundant and also to enrol it, to make concrete labour abstract, to make absolute surplus relative, to make formal subordination real. Labour's specialised versatility means that capital's dependency on living labour cannot be eliminated by restructuring. Thirdly, shifts towards Human Resource Management in personnel policies represent an indication of this tension. Living labour possesses a *structural capacity* to subvert both market and production-based subordination. However, historically-shaped workers' *organisational capacities* range from militancy to moderation and the production and reproduction of workers' self-organisation depends on social activity. A typology is suggested for understanding the difference between dialogical and monological organisation within which issues of worker resistance to and compliance with restructuring can be mapped.

PART ONE

INTRODUCTION

'War has become the only method of accumulation, and by the orchestration of patriotism's made opera that pace of manufacture which insists upon diminishing may be resuscitated for its brief time'.

Macleod drew his breath.

'War is permanent and the last argument of the apologist is no better than the first. If one bloc should vanquish the other, it will soon find itself almost totally impoverished. Its impoverishment enormous, the winner will find it impossible to set up the rational exploitation which could solve his problems. Instead, he must exploit as extravagantly as he dares not only the vanquished but his former allies as well. His demands must be so great in relation to what is left that a new military situation develops before the last has ceased'.

'The war begins again with a new alignment of forces, and to the accompaniment of famine and civil war, the deterioration continues until we are faced with mankind in barbary'.

Norman Mailer, *Barbary Shore*, 1952.

Chapter 1

Restructuring the defence industry

In Joel Schumacher's film *Falling Down* the central character, D-Fens is made redundant from the Californian defence industry. A violent vigilante reaction follows to what Mike Davis (1987:303) had earlier anticipated would be '... a closing frontier of income and status mobility' for increasingly marginalised 'Average White Males'. D-Fens' highly individualised behaviour, isolated from the solidaristic identities of others, derives from the collapse of the structural stability and relatively privileged position of white male workers at the core of the US military industry. According to Davis (1987: 302) Reaganite 'military Keynesianism' temporarily attempted to preserve the Cold War social bloc formed by the bourgeoisie, the middle strata and the more privileged segments of the white working class as 'a popular front against the depreciation of inefficient fixed capital ...'. With the Los Angeles area alone accounting for 17 percent of all US military spending the loss of defence-related jobs was a major structural factor in the overall loss of almost one million jobs in California between 1990 and 1992 (Cornford,1992). The 'shake-out' of the military industry is compounded by a 'wall of separation' between military and civil economies which prevents any straightforward civil assimilation of well-qualified, but narrowly specialised, blue and white-collar defence workers like the D-Fens figure (Markusen and Yudken, 1992). As the character puts it: 'I lost my job. Actually I didn't lose it; it lost me. I'm overeducated and underskilled - or maybe it's the other way around, I forget. I'm obsolete. I'm not "economically viable"'. (Clover, 1993:9)

Such a portrayal stands in marked contrast to the available representations of the industrial working class in Scotland. The iconography of labour, for instance, in Ken Currie's *Glasgow History* murals takes as its datum traditional heavy industries on Clydeside, the historic location of the shipbuilding, steel, armaments and engineering sectors of military industrial activity in Scotland. The murals are redolent of the labour traditions of collective struggle, working class solidarity, socialist organisations and the autodidactic worker as subjects suitable for heroic depiction.

The structural differences between the military industry in Scotland and the US are just as striking as are the cultural representations. Unlike the pervasive 'gunbelt' (Markusen et al. 1991) of the US 'military-industrial complex' the scale and scope of the Scottish component of the British 'defence industrial base'[1] is of a more modest order. Some of these contrasts are: that it is tied to the interests of a second-level power; it is located in an old industrial 'rustbelt' region of mainly branch plants in a period of spatially uneven 'deindustrialisation'; its workforce share widespread social-democratic political attitudes and are collectively self-organised into well-developed trade unions. The break-up of the privileged US military industrial 'popular front' would seem then to be incomparable to the situation confronting defence industry workers in Scotland. In short, the restructuring of the defence industry in Scotland might have been expected to have occasioned a collective response as defence firms both scrapped jobs and changed those remaining. As John Lovering (1990:464) put it:

> ... the current restructuring of the defence industry is designed both to scrap jobs and to change those remaining. As defence companies attempt to increase the flexibility with which they can redeploy labour between tasks and projects, they have moved into the forefront of the confrontation with organised labour.

This research seeks to examine Lovering's contention.

Methodology

The general aim of the research is to understand shifts in capital, state and labour relations in the military industry in Scotland. Key to the uneven restructuring process are issues of resistance and struggle and compliance and peace. This covers the broad topic areas of political economy and industrial sociology. The subject area demands an historically informed inter-disciplinary approach. Studies of the defence industry are often confined to economic, political or geographical effects of distinctive and dependent labour markets, product markets, corporate structures, technological innovation or the trade-off between preserving inefficient industrial capacity for military purposes and the demands of national economic performance. Important though such studies are they rarely take account of actual social conflicts and divisions between and within state, capital and labour. Instead a realism of policy or capital 'logic' is imposed onto seemingly

[1] Note the differences in characterising industrial activity for military purposes: military-industrial complex, coined by Eisenhower in 1961, is concerned with the social relations and processes between military, bureaucratic and business interests (Berghahn, 1981: 86-101) while defence industrial base is more concerned with the technical and empirical questions of optimising national productive capacity (Taylor and Hayward, 1989). Military, arms and defence industry will be used interchangeably.

arbitrary sequences of events. Moreover, the role of political, business, bureaucratic and trade union leaders is assumed to be of the highest moment in any restructuring process. Even where this assumption has some obvious validity to it, 'leader-centric' perspectives still tend to belittle the inconspicuous struggling that goes on within what Marx called the 'hidden abode' of production.

The main methodological issue for this research concerns the relationship between theory and evidence. Where theory makes general abstractions from the object of study it isolates particular aspects for analysis as a one-sided, closed system. Yet, if the continuities and changes in military-industrial structures are to be adequately accounted for then the many-sided dimensions of restructuring needs to be synthesised into a substantive theory. The possibility for this depends on the way that the conceptual framework enables the specific dynamics of restructuring and shifting levels of analysis to be coherently integrated. Conceptual clarity will be critical for selecting criteria to represent the particular mediations of economic, social, political, technological and spatial factors in the restructuring process.

Restructuring: a case for socio-historic critique

The notion of structure simply refers to the regular, patterned and relatively stable social processes and relations. Yet if we want to explain how seemingly stable structures change over time we need to find out how structural contradictions intensify over lengthy periods resulting in decisive turning points or conjunctural 'situations'. Such conjunctures are contested situations where structural contradictions forcefully pose a re-ordering of social relations over time, of 'cures within certain limits' (Gramsci, 1971). Such shifts are always constrained within certain limits and occur unevenly across space and time. This demands an analysis of particular mechanisms and multi-causal relations. The insistence by the restructuring school on the local and particular means paying attention to issues of how adequately theory and evidence 'fit' in accounting for the seemingly episodic as well as longer term processes. As Massey (1984:119) puts it:

> ... local changes and characteristics are not just some simple 'reflection' of broader processes: local areas are not just in passive receipt of changes handed down from some higher national or international level. The vast variety of conditions already existing at local level also affects how those processes themselves operate.

Conceptualising military industry

The military industry is often discussed as a disembodied 'thing-in-itself'. Neo-classical writers begin from Adam Smith's dictum that 'defence is the first duty of the sovereign'. Their central concern is with the technical and empirical problems of optimising the national 'defence industrial base' and it's contribution to military capability. In contrast, liberal writers in the United States have focused on the concept of the 'military industrial complex' (MIC). Although more concerned with political and economic relations and processes between military, bureaucratic, capitalist and public interests, the MIC is treated as a relatively static, autonomous social bloc. For Melman (1975) the military-industrial-complex, in pursuing its own overriding interests, deforms the normal workings of the government and the economy. The military-industrial-complex also formed a key component of JK Galbraith's (1967) 'technostructure' in which the specialised role of the military industry defined the meaning and context as well as the technology embodied in weapons production, with competitive obsolescence in weapon technology a nearly perfect substitute for battlefield attrition. A further socio-technological trajectory was developed by Kaldor's (1981) notion of the 'baroque arsenal' of sophisticated military technologies generated by a conservative routinisation of innovation with diminishing technological returns for escalating costs.

In these varied approaches the distinctive activities around production for military purposes are conceived in terms of empirically identifiable stable properties. This ahistorical reification of military industrial structures has come under sustained critique (MacKenzie, 1983; Lovering, 1987a; 1990a; 1994a). Notions of seemingly autonomous, permanent social forms and inexorable technological trajectories, immune from wider processes of change, are of limited use for understanding the current restructuring of the military industry.

Military expenditure supported and protected military industries for over three decades but became an economic burden on the states who bore the uneven incidence of escalating defence costs, principally the US, the USSR and, to a lesser extent, the UK, eroding their competitive economic position. Military industrial structural dominance was preserved until the mid-1980s largely because symbiotic military bloc rivalry generated a technologically-driven arms race as a coherent aim of supposedly self-sufficient national industrial capacity. By then the situation had long matured for immanent restructuring.

The first attempt at this in Britain was the 1957 Defence Review, describing itself as 'the biggest change in military policy ever made in normal times' (cited in Chalmers, 1985:68). However, this completely failed to significantly reduce defence spending as a proportion of gross domestic product. Chalmers (1985:75) calculates that between the Sandys Review, 1957, and the last year of the Conservative administration, 1963/4, real defence expenditure grew by almost 8 percent and as a proportion of GDP it declined by a negligible 0.6 percent. Fifteen years later this had fallen to 4.4 percent of GDP in 1978/9 (Chalmers, 1985:100) but it returned to the level of the late 1960s by the early 1980s at over 5 percent of GDP (Chalmers, 1985:136). This was boosted by the Falklands War and the previous Labour government's commitment to NATO (including 3 percent annual real increases in the defence budget) which the Conservatives inherited and continued until 1985/6. The real rises in defence spending need to be understood in the context of the so-called 'relative price effect' whereby the cost inflation of defence equipment, the rate of specifically defence costs on top of the general rate of inflation in the economy, rose on average by some 2 percent while for major equipment prices rose by 6-10 percent faster (Smith and Smith, 1983:34).

The slow, episodic attempts at 'cures within certain limits' repeatedly failed in Britain during the 1960s and 70s. The main impediments to change were: the hegemony of US-led Cold War Atlanticism; the relative, institutionalised strength of the labour movement; market rigidities; the permanent condition of state bail-out for defence firms; political expediencies; and guaranteed profitability of defence contracts. In all events a thoroughgoing treatment of structural crisis was repeatedly postponed. In Britain repeated defence reviews and internal MOD reorganisations were *post hoc* attempts to remedy imbalances between budgets, defence commitments and capacity requirements.

By the 1980s the terms of the national congruence of state and capital military industrial structures were therefore beginning to be revised in the context of the limits to military spending imposed by fiscal crisis, the high price inflation of weapons equipment and the development of advanced technological capabilities, particularly in Japan and Germany, outside the military industry (Harman, 1984; Lovering, 1990; 1993; 1994a). However, restructuring only really began in earnest in the mid-1980s and was caught between the seemingly paradoxical demands of free market solutions to improve competition and efficiency while the state retained a national

commitment to a well-equipped nuclear defence posture. The accomplishments thus far are open to dispute.

The restructuring of military industry

According to Lovering (1990a; 1991b) capital and labour in the arms industries formed discrete class fractions because of their specific relation to the process of production and appropriation of surplus. These relations converged with the Fordist model more closely than most of British industry, as the institutionalisation of organised labour meant formalised internal labour markets, including labour 'hoarding' by firms, and collective bargaining procedures '... generally ensuring good pay, conditions and chances of advancement. For workers in defence plants, life tended to be fairly easy' (Lovering, 1990a:457). On other counts, however, military industry diverged from classical Fordism since small batch production of complex and innovatory products restricted the potential for mass production and frustrated a Taylorist routinisation and deskilling of the labour process. The need to perpetually innovate to order by the defence industry prevented precisely the kind of technological diffusion and standardisation throughout the economy predicted for example by the life-cycle model of military industry (Todd, 1988), and claimed a disproportionate share of scientists and engineers (Lovering, 1990b). Such characteristics of a supposedly neo-Fordist regime of accumulation were present in the military sector during the supposed height of the Fordist regime.

The structure of military industry throughout the period of the cold war changed only within certain narrow limits. Because the state system and the capitalist economy cannot be prised apart into separate pristine structural forms, the precise nature of the interaction in reproducing military industry requires distinct periodisation and concrete empirical analysis. The precise forms military industrial relations take are 'contingent' on this wider framework. Viewing the MIC as contingent has the advantage of focusing on the mechanisms for structural change instead of imposing a limiting or partial conceptual schema on changed conjunctures.

Alert to the potentialities for structural change, Lovering in particular has paid particular attention to how geographical, industrial and corporate shifts in the military industry connect historically to the restructuring of capitalist production and the nation-state. During the 1930s and 1940s the international arms industry collapsed, creating a new national nexus of private capital and state

interests around military industry based on vehicles, aircraft and electronic engineering industries (Lovering, 1986; 1993; 1995). Total war militarised the economy to an unprecedented level which continued, at reduced levels, after the post-war economy was remilitarised in the late 1940s around nuclear, aircraft, missiles and electronics. Wartime relocation had the effect of shifting defence plants westwards although industries such as aircraft retained the previous southern bias. The cold war not only rearranged the hierarchy of weapons technologies but ossified the geographical distribution of its production preserving defence-dependent localities like Bristol (Lovering, 1985; 1988a; Boddy and Lovering, 1986), Derby, Manchester and Preston (Lovering, 1988b; 1991a), for example, around aerospace. The cold war industry of large sites carrying out a range of activities, from R&D to production and assembly, and dominating local labour markets, survived the deindustrialisation of the early 1980s as sub-regional 'islands of prosperity' (Lovering, 1988b). Although such 'islands' resisted a straightforward spatial division of labour by function, and during the 1980s some 'lower' production functions relocated away from the South East, the cold war 'spatial-fix' was generally biased towards the south and west of England (Lovering, 1993; 1995). The spatial 'layering' of the disproportionately large arms industry in Britain closely followed the contours of the different phases of industrial development and capital formation because of the state's special preserving input for built capital and regional coalitions in the military-industrial nexus. And in drawing a contrast between the unevenness of military spending, infrastructure, technological sectors and labour markets in Bristol and South Wales, Lovering (1985; Hall et al. 1987) argues that ideological images of place held by elites also partly influenced the allocation of defence investments and contracts. In this account Bristol was advantaged by being seen by elite groups as part of the 'English heartland' offering suitable life-style packages while the imagery of South Wales differed as militantly proletarian with an non-English, incomprehensibly foreign culture.

By the early 1980s it was becoming increasingly apparent to government and industry that this remarkable institutional stability could not be sustained. If the geo-political cold war ended in 1989, 1985 was the year when the corporatist cold war ended. Since then military expenditure has fallen; competition introduced into procurement procedures; major, costly projects cancelled; administrative procedures reformed; and traditional forms of government support become less apparent. Lovering (1990a:458) argued that,

> Faced with over-capacity, and an inheritance of employment and production practices suited to a more indulgent age, the British defence industry is currently engaged in a radical restructuring, far more so, in general, than UK civilian industry.

Unlike autarchic cold war structures the emerging arms industry is gradually becoming internationalised as a result of mergers, take-overs and amalgamations, and transnational collaborations (Lovering, 1994a; 1994b). Capital is increasingly concentrated within and across national boundaries, although there may be varying national limits to this process, making the prospects for an integrated European MIC particularly baleful. Yet it was precisely the limits imposed on the technical and social division of labour by nationally-based arms production compared to non-defence production that precipitated restructuring to begin with. Across-the-board specialised capacity, constrained by national boundaries, brought with it cost penalties which the fiscal crisis of the British state found increasingly difficult to endure. Paradoxically, the dominant corporate strategy of the major arms companies in the early 1990s appears to mean further retrenchment and even diversification *within* arms production while some non-defence products are beginning to match the technological sophistication of defence components.

In the early 1990s the restructuring and contraction of the British arms industry seemed to be giving rise to a new, more comprehensive spatial division of labour as single-site across-the-board capacity fragmented by function (Lovering, 1991a). Control and conception functions were generally consolidated in the South East, largely because of the inelastic supply and growing demand for scientists and engineers, with production and assembly plants increasingly dispersed to take into account local labour market conditions (Lovering, 1990b;1991b; Saxenian, 1989; Dickson, 1983). Cumulative causation effects were therefore being felt in the contraction and rationalisation of capacity, reflecting current regional prosperity and previous rounds of arms-induced investment. Yet this uneven development was also integrated as the Southern core of the British economy benefits from the consolidation of high-level arms-related activities while regional centres of 'screwdriver' plants are more vulnerable from the continuing technological intensification of weaponry and shrivelled demand. In employment terms Lovering (1991a:291) suggested that a quarter to a third of a million jobs would be lost by the late 1990s, concentrated among 'lower' level workers, a faster and greater contraction than either that of the steel or coal industries in the 1970s and 1980s.

Why Scotland?

Within this broad framework the position of military industry in Scotland can be situated. Scotland has been identified as a region suffering from chronic industrial restructuring of a *longue duree* character. 'Crisis' therefore becomes difficult to separate out from more general processes of industrial change (Eldridge, et al, 1991). What makes military industry significant in this context is that it was largely inoculated from the kind of job losses, plant closures, work reorganisations, relocation, and declining plant size associated with 'traditional' civilian manufacturing. The historical evolution of the modern military industry will be traced as a guide to understanding its peculiar position in the 1980s. Before rearmament in the late 1930s the military industry in Scotland barely existed, kept afloat by a trickle of warshipbuilding contracts on Clydeside. Yet, after 1945 Scotland, increasingly placed at the centre of gobal military-bloc rivalries, was transformed into a 'major *place d'armes*' (Erickson, 1969:72)[2] An historical analysis will show that Scotland repeatedly developed military-industrial capital in response to heightened military competition, the post-1889 arms race, 1905-14 rearmament, 1936-39 rearmament and the 1914-18 and 1939-45 wars, which contracted only with the disarmament of 1922-36. Even after 1945, and especially after the Korean war, the permanence of military industrial capacity in Scotland seemed assured. It is the terms of this military industrial formation which are in the process of dissolution in Scotland. A more detailed discussion of arms industry restructuring in Scotland follows in chapter 2. For now I want to indicate what the research set out to do and how it attempted to do this.

The research

Since restructuring assumes that industrial change is historically conditioned two case studies were selected for detailed historical study. These are the military electronic firm, Ferranti in Edinburgh and Rosyth Dockyard, naval ship repair yard in West Fife. Arguably these represent two of the most important firms in Scotland in terms of employment and technological capabilities. One, Rosyth, seems to be in a traditional sector, shiprepair, while the other, Ferranti, is in a 'sunrise' sector, electronics. Yet the object is not to make direct comparisons based on two cases. Instead the point is that these firms are exceptional in important ways. Rosyth became a lead British dockyard after centuries of domination of the naval-industrial complex by yards in the south of England.

[2] The magnitude of the Scottish 'integrated defence establishment' was catalogued by Spaven in 1983 in a directory listing some 219 military bases - and this did not include military-industrial capacity in Scotland.

Ferranti is a rare leading-edge military electronics firm outside of the M4 corridor. Privatisations, competitive fixed-price contracts, diminishing naval and increased strategic nuclear and electronics significance resulted in different impacts in different sectors. In ordnance, shipbuilding and shiprepair firm strategy is geared towards surviving (Todd, 1991). In military electronics firm strategy depends on intensified niche specialisation and the development of 'leading-edge' technologies (Morgan and Sayer, 1988). Labour and capital are sectorally segmented, with capital becoming increasingly concentrated while labour is divided both by section and plant. In examining Rosyth and Ferranti the dynamics of workplace relations will be contextualised within a political economy of restructuring.

A serious problem for studying the restructuring thesis as it might apply to the arms industry is access to source materials. The arms industry is notoriously secretive. Two main sources of material were drawn upon: documentary and semi-structured interviews. Official Parliamentary reports, such as Defence and the Public Accounts Committees, covered policy reforms and implementation. The writings of (ex)senior civil servants in the MOD, Ministers and senior military officers were useful sources for the intentions and attitudes behind often secretive processes of policy formation. Minutes of meetings, departmental memoranda and reports, workplace briefs, official trade union reports and circulars, campaign materials, consultants' reports and the like allowed a picture to be built up of events and attitudes from the point of view of actors at different places in the restructuring process.

Access was also negotiated to interview key actors in each workplace. Thirty-eight interviews were carried out from 1994 to 1996, lasting between one and four hours, sometimes over two sessions as in the case of the pilot interview. Interviews were conducted with Directors, senior, middle and junior managers, Personnel, Planning, Human Resource and Industrial Relations managers, supervisors, trade union conveners and shop stewards, and rank and file workers. Interviews were semi-structured and covered topic areas relevant to the interviewees' particular vantage point within the relations of production. Interview content covered respondents' own interpretations and helped to establish events and their sequence. In one workplace audio recording was permitted, allowing full transcriptions to be made and analysed. In the other one, recording equipment was banned under the Official Secrets Act. Here copious interview notes were taken and returned to the interviewee for comment and correction.

Biographical note

In the early 1990s, therefore, a crisis was expected to visit defence industries everywhere. For some in the industry it proved a short-run thing and they soon returned to business as usual. For most defence sectors, firms and workplaces in Britain, however, the crisis came as a monumental shock after four decades of industrial decadence. Barely perceptible processes long in gestation resulted in an industrial structure all the more sensitive to the impact of a rapidly changing environment. When it burst through the crisis was a problem to be cured by large, frequently administered doses of restructuring, a polite term which disguised the social and personal wounds inflicted upon thousands of defence workers, their dependents and their localities. Restructuring as a policy of 'necessary adjustment' was implacable in refocussing corporations on 'core activities', 'downsizing' firms, 'streamlining' organisations, 're-engineering' productive processes, 'rationalising' space. Protected by a military industrial divide from the forces working on civil industry over the previous decade and a half, defence work represented a final resting point where industry was sealed off from the sclerosis debilitating the rest of the national industrial body. The illusion that defence production would remain immune from the wider shake-out and contraction of industry, only made the audacity and intensity of it when it came seem all the more dramatic.

As a way of opening this up a bit further I want to offer a retelling of my own background. This is for two reasons. First, it allows the reader to locate where the writer is coming from, socially, geographically, politically and intellectually. Second, an autobiographical detour is suggestive of what C Wright Mills (1951:xx) in the early 1950s called the 'one great task of social studies'

> ... to describe the larger economic and political situation in terms of the meaning for the inner life and the external career of the individual, and in doing this to take into account how the individual becomes falsely conscious and blinded.

The stress on structure made by Mills was in response to the pervasiveness in American sociology at that time of what he called elsewhere 'psychologism' (1959:67n). Psychologism explains any social phenomenon in terms of assumptions about the psychological make-up of individuals. Mills (1959:8) tried to overcome crude 'psychologism' by relating the 'personal troubles of milieu' to the 'public issues of social structure', although again Mills' formulation tended to remain schematic and static, hypostatising milieu and structure. Nonetheless, and in line with Mills' own substantive

work. I want to use the idea of milieu and structure, not as unchanging and distinct categories but as mutually informed by a dialectic relationship. This will allow me to retrace an autobiography connecting up milieu and structure, personal troubles and public issues. Perhaps this will be closer in spirit to Braverman's (1973:21) image of the threading of history into a worked-up fabric

> Social determinacy ... is a historic process. The concrete and determinate forms of society are indeed 'determined' rather than accidental, but this is the determinacy of the thread-by-thread weaving of the fabric of history, not the imposition of external formulas.

In Scotland in 1979 some of the threads were being unpicked and re-woven, although the fabric itself remained immediately recognisable. One such thread was the election of the first Thatcher government. Another was that this coincided with, and further exacerbated, existing trends in British manufacturing industry. In the first two years of the Thatcher government manufacturing, and engineering in particular, went through the most severe slump in half a century. Between 1979 and 1981 manufacturing output in Britain fell by 17 per cent, employment by 1.2 million or 16 per cent and capital investment by a third. In the west of Scotland the industrial stitching had been awry for a much longer period. There the shake-out between 1979-81 came as only the latest episode of a lengthier process of industrial dismantling (Aitken, 1991).

On the very same Friday in December 1979 all three male wage earners in our household in the Tollcross area of Glasgow were made redundant. Each of us was a manual worker engaged in metal working in some way; my dad was a burner, cutting up the metal skeletons of Scotland's industrial infrastructure for scrap; John, younger brother by two years, was a welder tacking railings and gates together; and I was in the third year of training as an apprentice mechanical fitter. Manufacturing plants in the east end of Glasgow, such as British Steel's tubeworks in Tollcross and United Glass' bottle works in Shettleston were in terminal decline and even the once mighty Parkhead Forge was destined to live on only as the name of a cluster of pyramidical shopping outlets. Industrial workers had fewer and fewer choices after redundancy; for many the choice was either to 'get on their bikes' or enter the 'service sector'. Or for older workers another prospect loomed: that of long term or permanent unemployment. After spending most of his adult life working in an insecure and dangerous industry, with the constant risk of burns from the gas torch, falling from a redundant crane being scrapped, crushed by collapsing steel structures or

breathing deadly toxic fumes from burning through lead-coated pipework, at the age of 45 in 1979 my father would never again get taken on for any kind of paid work. John, on the other hand, had the advantages of youth and re-trained locally as an engineer servicing domestic appliances, and so combined engineering knowledge and skills in the setting of the so-called service sector.

Until redundancy I had worked at the Carntyne Works of NEI Thomson Cochrane Ltd, next door to what was left by that time of Beardmore's Parkhead Forge. Thomsons specialised in manufacturing oil, gas and coal-fired boilers but the cancellation of a major order to Iran after the revolution unpicked yet another thread; Carntyne closed and the remaining orders were redirected to NEI's plant at Annan in Dumfries. The Carntyne works had been strongly unionised and disputes were a regular feature.

The main reason I started at Thomsons was because it was within daily walking distance from Tollcross; yet in 1980 I ended up working 500 miles away on the south coast of England. In central Scotland engineering workers who wished to continue at the trade would often find themselves travelling northwards to the oil industry or southwards to the defence industry. By chance, I ended up going south after Personnel Officers from Portsmouth dockyard arrived in Glasgow as part of a nation-wide recruitment tour. Interviews were held at a hotel close to Central Station where they agreed to let me finish my apprenticeship. At Portsmouth I soon came across a colony of west of Scotland engineering workers as well as groups of workers from Sunderland, Newcastle, Liverpool and Wales, trying to keep ahead of the desertification of the British engineering industry. But Portsmouth proved to be another mirage. In 1981 large-scale redundancies were announced under John Nott's defence review. Recent recruits who had already been assigned 'established' status were give the chance to transfer to either Rosyth or Plymouth dockyards; non-established workers were made redundant almost immediately. A similar process was going on at Chatham dockyard in Kent. As an apprentice I was not established but the Chief Apprentice Training Officer took pity on me and arranged for a transfer to Rosyth.

Although it lacked Portsmouth's historic traditions or architecture Rosyth was very recognisable as a dockyard; the same forms, the same rules, the same pecking order, the same kind of managers, the same ambivalent attitude among the workers to authority and work and, of course, the same old

Navy. With my time just about out I was put in the machine shop of the factory as a turner on the centre lathes and after a while became a shop steward.

This became increasingly important and serious. In this two books above all struck a chord, the immediacy of Huw Beynon's *Working for Ford* and the analysis of Harry Braverman's *Labour and Monopoly Capitalism*, both informed by a deep understanding of work as a social activity, first and foremost. Braverman's experience of working as a coppersmith in a naval shipyard, 'a type of industrial enterprise which, at that time, was probably the most complete product of two centuries of industrial revolution' enabled him to recuperate the centrality and prescience of Marx's 'critical analysis of capitalist production' (1974:5,8). Here milieu and structure are mediated at the point of production, not counter-posed to each other, and social division and co-operation are simultaneously re-threaded.

The structure of the rest of the thesis is as follows. Chapter 2 will touch on some of the salient features of the arms industry in Scotland. This will give a context for what will be described for Rosyth and Ferranti. Part 2 consists of the case study chapters. In both cases origins, organisational structures, workplace relations and technical change will be presented. The first case study, Rosyth, locates it within a context of traditional historic state dockyards with specific kinds of organisation and employment relations. In Ferranti's case, a family firm founded on technological innovation becomes transplanted to Edinburgh to emerge by the 1960s as one of the leading manufacturing firms in Scotland. The chapters discuss relations within the workplace, leading up to take-over by outside managers as the signal for restructuring. Trade unions and the labour process are central to how this is understood. Part three attempts to place the case studies within a wider explanatory framework to account for the restructuring of state, capital and labour. A chapter is given over to first, the nature of ownership and control, second, changes in the nature of management authority and control in the workplace, and third, the question of labour and self-organisation within the restructuring process.

Chapter 2

The arms industry in Scotland

Restructuring after the end of the Cold War was widely expected to consolidate the southern regional grip on UK defence production. Behind this assumption lay a crude cumulative causation model. Companies squeezed by spending cuts as the industry became concentrated in still fewer hands meant impending rationalization and closure of remote divisions. The resulting flight of the defence industry 'home' to its southern core would undo the minor regional dispersal accomplished by the Second World War and consolidated by the Cold War. Important sub-centres of the UK defence industry, such as central Scotland, thus faced a vista of declining employment and plant closures in the 1990s. Indeed the decision to base nuclear submarine refits at Devonport dockyard, Plymouth in June 1993 instead of Rosyth dockyard, the largest single-site employer in Scotland, and the closure of the Rosyth naval base in July 1994 seemed to confirm such fears. Other events, such as the takeover of Ferranti, the biggest electronics employer in Scotland (Peters, 1990), by GEC further contributed to the sense of regional vulnerability to defence industry restructuring. A related expectation was that such restructuring could well result in fierce resistance from workforces who had traditionally been well-organized and used to relatively privileged bargaining and employment practices. Again, Scotland, often imagined as a militantly proletarian community, was expected to be a leading centre for contesting the logic of defence industry restructuring.

Spatial restructuring and labour resistance has and is taking place but in ways in which the structural-logic model underlying these twin hypotheses fail to anticipate. What follows will briefly put the defence industry in Scotland in historical context. A model consisting of four broadly distinct rounds of arms production during the last century will be developed. Then I will turn to some features underlying the current bout of restructuring. Some of the paradoxes faced by the trade unions in the struggle for workplace survival within the restructuring process will be outlined.

Whither the arms industry?

Finding out the extent of defence contracting done in Scotland is problematic. In some ways the most detailed information has been best presented in the socio-economic impact studies of individual workplaces, bases, towns or regions. In Scotland such studies have been conducted into the key defence establishments: the Clyde Submarine Base in the 1970s and 1980s

(Fleming, 1988); the Royal Ordnance Factory at Bishopton (Greenwood 1989; Ramsay, 1990); GEC-Yarrow in Glasgow (Cmd 2852, 1995); and the Rosyth dockyard and naval base complex in Fife (FRC 1979; 1993; 1994a; 1994b). Such reports have been supplemented by regional studies into the three major concentrations of defence employment in Scotland: Fife (FRC 1991); Lothian (LRC, 1991); and Strathclyde (SRC 1992); although others regions affected indirectly by cuts such as Central and Dumfries and Galloway (CRC, 1992; DGRC, 1993) have also produced reports. Nationally, the information becomes more unreliable. In 1992 Scotland was estimated to be more defence-dependent than the UK as a whole with Fife the most dependent region in Scotland (SE, 1992). Yet such levels of defence-dependency in Scotland do not show in the EC report on the socio-economic impact of reduced defence spending (EC 1992), while the annual UK *Defence Estimates* (now *Defence Statistics*) conceals the degree of local dependencies under Scotland as a single regional category. Only recently have authoritative broad-based studies of the defence sector in Scotland emerged, such as the research to support Scottish Enterprise's 'Scottish Defence Initiative' (BSL, 1992; Meacham, 1993), although substantial independent research had earlier measured defence-related employment in total for Scotland (Fleming and Smith, 1987) and sectorally for military aerospace (TASS, 1984) and defence electronics (Peters, 1990).

Attempts to quantify the extent of the defence industry are, however, of limited utility since there is no single static form which the defence industry takes. Moreover, what exactly counts as the 'defence industry' has been subject to definitional dispute, the terms of which are often presented rigidly and ahistorically. The defence industry is often discussed as a hypostatised 'thing-in-itself', formed through its relationship with the end user of military equipment - the state. Orthodox writers thus take as their central concern the technical and empirical problems of optimising the national defence industrial base and its contribution to military capability (Kennedy, 1983; Taylor and Hayward, 1989). On the other hand, critics of the 'military-industrial complex' treat it as a relatively stable, autonomous social bloc, deforming the normal workings of democracy and capitalism (Melman, 1975). Beyond such generalities the precise character of the industries which constitute the defence sector are difficult to grasp. This is particularly so given the changed procurement environment, corporate structures and ownership patterns since the mid-1980s. Instead of unhelpful catch-all definitions, I want to chart briefly the different ways in which the UK defence industry was shaped historically.

Figure one: Four phases of arms production structures

	Cosmopolitan militarism 1880-1914	**Autarchic militarism** 1920-1940	**Technocratic militarism** 1950-1985	**Marketised militarism** 1990s
Key technology	Warship	Aircraft	Nuclear	Electronics
Industrial formation	International naval-industrial complex	National air ring	Atlanticist Nuclear industrial complex	Diversified multinationals
Ownership pattern	Private	Private	Public / private mix	Private
Size of firms	Large	Small to medium	Medium to large	Large
Demand	High- arms race	Low- disarmament/ arms controls	High-arms race	Moderate- declining levels of arms spending
State's role	Hands off but supported by Royal Dockyards and Arsenals	Indirect regulation	Nationalisation/ subsidies	Privatisation and indirect regulation
Organisation of production	Large-scale, vertically integrated handicraft production	Small-scale handicraft production	Extensive in-house mix of R&DD and handicraft/mass production	Internal 'core' of elite specialised conception functions - External 'periphery' of routine manufacturing functions

One approach to this is Todd's (1988) notion of the 'military industrial enterprise' (MIE) based on ascending or descending weapons technologies. Key to Todd's MIE is a long term shift in strategic importance from platform technologies such as ships or vehicles to system technologies, such as electronics. Three main phases have been identified by Todd: first, 'traditional' MIEs based around mechanical engineering, armour and heavy ordnance,

associated with warships; second, 'modern' MIEs based around electric power and the internal combustion engine associated with military vehicles and aircraft; third, 'emergent' MIEs developed around electronic systems, such as electronic warfare decoys, jammers and receivers and missile guidance systems. These three phases of MIEs correspond roughly to Edgerton's (1991b) notion of 'liberal militarism', whereby emerging weapons technologies alter strategic thinking and, consequently, national industrial formations. Under 'liberal militarism' an 'indirect' approach to British militarism is preferred because of a constant struggle in the military-bureaucratic apparatus between liberal demands for state economies and conservative (and reformist) demands for a strong state (see Gamble, 1979). From around 1880 to 1914, 'navalism' was dominant, founded upon Todd's 'traditional' form of MIE. In the interwar period, 'airforceism' based around 'modern' MIEs predominated. From the 1940s to the 1980s, 'nuclearism' became paradigmatic around 'emergent' MIEs.

Although, or because, Todd develops a life-cycle model of the firm to account for shifts in the fortunes of MIEs, the end product, weapons technology, is accorded a central role in shaping the defence industry. While building on the insights of Todd and Edgerton the focus can be shifted away from the 'technological imperative' to one centred on the socio-economic organisation of arms production. Crudely, four broad socio-economic phases of militarism are outlined in figure one. The following section puts the defence industry in Scotland within this broader context.

Arms production in Scotland

Until the late nineteenth century state demand for, and direct organization of, military production in Scotland compared unfavourably with England. Yet, between the 1880s and 1920 and again after the 1940s, Scotland was placed at the centre of global military-bloc rivalries. In the earlier period the west of Scotland was an integral part of the British naval-industrial complex. The Clyde's importance as a military industrial area was based on warshipbuilding, armour-plating, marine engineering, ordnance and guns. Leading firms such as Beardmores, Napiers, Fairfield and John Brown, Weir, Barr and Stroud and Arthur Yarrow became integrated into the international arms combine (Moss and Hume, 1977; Peebles, 1987; Sampson, 1977; Pollard and Robertson, 1979).

Privately-based specialisation in the naval-industrial complex, an advantage in an earlier round of arms production, during the interwar years no longer resulted in regional privilege falling to Scotland. Instead a series of naval restriction policies, the 'ten-year ruling' in 1919, the

Washington treaty in 1922 and the London treaty in 1930, and Treasury economies ensured a low level of UK naval warshipbuilding (Peebles, 1987, ch8). Clydeside shares of a much reduced total for UK warship construction fell dramatically from a wartime high of 41 per cent to 1.5 per cent in 1920 and 0.0 in 1924, with a small but erratic improvement in the early 1930s before rearmament eventually revived the Clyde shipyards' share of a growing naval output (Todd, 1981:165). With the Armistice, the fortunes of firms locked into the naval-industrial complex like Beardmores became entwined with the alternating prospects of war. In the 1920s, many such firms went into chronic decline. If they managed to survive intact the austere middle decade of the inter war years, feverish rearmament restored the profitability of the steel-armour-heavy engineering-shipbuilding nexus as an attractive prospect for capital. Meanwhile the latest addition to the naval-industrial complex in Scotland, Rosyth dockyard on the River Forth, was closed under naval economies in 1925, a mere eight years after opening as a functioning dockyard. While Rosyth was the most modern dockyard in Britain the Admiralty decided to sacrifice it (and Pembroke in Wales) rather than any of the three older 'historic' dockyards in the south of England (Ward, 1988:84-7).

By then a new national nexus of private capital and state interests had emerged, organised around aircraft, vehicles and electronic engineering. Heavily concentrated in inner Britain by the locational demands of the Air Ministry, a 'ring' of favoured aircraft companies were nurtured. Traditional arms producers like Beardmore's, then attempting to transfer into aircraft production, remained outside the 'ring'. No major firm left the industry for thirty years and no new firms entered until the 1940s (Edgerton, 1991b). By the late 1930s the cumulative locational advantages of Air Ministry preferment became strategic disadvantages as southern and eastern parts of Britain were identified as particularly vulnerable to aerial bombardment. The resulting air safety classification by the Air Council into 'safe', 'unsafe' and 'dangerous' zones in 1934, became an important factor in the later dispersal of military industry across Britain during rearmament (Hornby, 1958).

Although industry in Scotland did not recover the technological lag in aircraft capabilities rearmament had the effect of both ossifying and modernising the traditional industrial structure in Scotland. One estimate of the regional distribution of employment generated by rearmament between 1935 and 1938 suggests that Scotland gained disproportionately (Thomas, 1983:569). The wartime growth of firms planning and operating large branch plants making mass standardised products in different locations around the country made it possible for the state to act as a catalyst for the technical, managerial and spatial restructuring of capital. The

government funded new 'shadow' factories and extended existing capacity to be managed by traditional armament firms, and allocated 'educational' orders to induce outside firms into armament production. By owning and equipping the privately managed agency factories for munitions and aircraft production the state retained a formal policy commitment to *laissez-faire* competition within industry while developing suitable industrial and managerial structures for rearmament (Hornby, 1958:86). Although relatively few new government factories were built in Scotland during the war the shadow scheme had important consequences for the siting of industrial capacity in Scotland. Strategic policy often overlapped with industrial and regional policy, particularly where high wage inflation for skilled labour and the vulnerability to aerial bombardment in the South East and the Midlands made the Special Areas containing unemployed labour more attractive locations (Peden, 1979:82-3; Saville 1985:17-18).

Crucially, wartime Scotland renewed its toehold in the military aircraft sector. New capacity for aircraft production was added at Prestwick, managed by Scottish Aviation Limited (SAL) but only after an Air Ministry official had insisted that a west of Scotland site would be unsuitable and 'on no account' would aircraft or equipment orders be allocated to 'Red Clydeside' (Robertson, 1986:26). By July 1944 SAL employed 6500 and was hoping to become a 'senior player' in the UK aircraft industry, particularly after being admitted to the Air Ministry 'ring' in 1942. However, the rapid cancellation of Ministry contracts with the end of wartime demand resulted in an employment freefall, with just 1750 jobs remaining by 1948 (ibid:100). Post-war, SAL declined erratically and was eventually swallowed up by British Aerospace in the 1976 nationalisation of the industry. The image held by the Air Ministry official of industrial Scotland as militantly proletarian made employers cautious about relocating war production in Scotland. In the case of Rolls Royce, the official historian of wartime factory and plant comments:

> After an attempt to find the resources of labour and subcontracting capacity near the factories at Crewe and Derby, the firm *courageously* decided to venture into Scotland and chose a site near Glasgow. This was indeed *a leap over the Border*, with much uncertainty as to the supply of labour; only a small fraction of the skilled labour was available and extensive training schemes were necessary. The firm had some qualms whether a name that was synonymous with luxury - Rolls Royce - might not arouse the antagonism of the Clydeside workers.
> (Hornby, 1958:290, my emphasis).

Indeed this sense of unease seemed to be borne out by the wartime experiences of the Rolls Royce management. Instead of dealing with traditional male craft workers, the dilution of the 20,000 workforce at Hillington meant that women composed 39 per cent of the workforce, while only 4.5 per cent were skilled men (Croucher, 1982:285). As Croucher records, 'One manager complained that the district 'is seething with communists and strikes and threats of strikes occur the whole time', while another said: 'The Clydeside workers are the most difficult in the world to handle. The fact that Hillington is a government factory they consider gives them the right to criticise it from all angles' (ibid:286). Against official recommendations, in 1943 this mood of belligerence resulted in the first large-scale wartime strike by both men and women on the question of women's wages.

A third aero-industry firm, Ferranti, joined Rolls Royce and SAL in Scotland. Arriving in Edinburgh in 1943 to manufacture gyro-gun sights (GGS), the Scottish Group of Ferranti emerged as one of the key UK military electronics companies in the 1950s (Wilson, 1980) and became one of the largest and most innovative hi-tech firms in Scotland. Although Barr and Stroud's factory at Anniesland in Glasgow manufactured range-finders for the Admiralty since the 1890s (Sumida, 1990:73-6; Williams, 1993: 33-5), they had begun to produce bomb-gunsights for the RAF in the mid-1930s and later supported the wartime production of Ferranti's GGSs (Moss and Russell, 1988:140). With the shift into electro-optics in the 1950s Barr and Stroud joined Ferranti among the emergent hi-tech arms producers in Scotland. Nevertheless, while wartime relocation had the effect of selectively shifting UK defence plants north and west, hi-tech arms industries such as aircraft retained a distinctly southern bias (Lovering, 1993:124-6).

Most wartime industrial capacity added in Scotland was for more traditional basic industries: a major new, modern propellant Royal Ordnance Factory (ROF), at Bishopton, near Glasgow; an aluminum rolling mill at Falkirk; a ship-breaking depot at Garelochhead; a Ministry of Supply clothing depot at Motherwell; as well as a range of infrastructural developments to service military bases in the remote Highlands. (Cmd 7125, 1947). Traditional armaments firms, such as the troubled Beardmore, expanded production mainly by managing relatively risk-free state-owned shadow factories (Hornby, 1958:164). Such firms were part of a wider industrial effort in Scotland, with the main industrial classifications doubling or trebling employment during the war. Motor Vehicles, Cycles and Aircraft, for instance, expanded employment to 52,260 in 1945, 285 per cent of the 1939 total (Saville, 1985:31). Shipbuilding and shiprepair also went through a renaissance with heightened wartime demand. Employment

in this sector grew to 65,070 by 1945, 172 per cent of the 1939 level. Clydeside, in particular, benefited in relative and absolute terms from wartime demand, specializing in large warships (John Brown, Fairfield, Scotts and Stephen) and destroyers (Yarrow and Denny), with non-naval east coast yards on the Forth, Tay and Aberdeen temporarily building escorts and smaller naval auxiliaries.

Arms production in Cold War Scotland

Vigorous campaigns were organised in Scotland to prevent another rundown of industry at the war's end. The main focus of these were publicly-owned plant: the Royal Ordnance Factories, Prestwick Aerodrome and Rosyth dockyard. At least 46 other wartime government factories were allocated to private industry after the war, including Rolls Royce at Hillington and Ferranti in Edinburgh (Cmd 7125, 1947). By the 1960s Ferranti in Edinburgh, Rosyth dockyard in Fife, Barr and Stroud, Rolls Royce and Yarrows in Clydeside had firmly consolidated their positions as reliable centres of war-related production. While defence production receipts were always under its proportionate share, military spending in Scotland supported a range of emergent hi-tech activities in a way that civil industry failed to. Ferranti, in particular, was fundamental to the establishment of an electronics industry in Scotland (Burns and Stalker, 1961). Ferranti's role had four main aspects (Peters, 1990:256-7). First, Ferranti developed and supported a local electronics labour market, especially training electrical engineers. Second, a limited number of entrepreneurial spin-offs into the local economy came out of Ferranti, such as Fortronic, MESL, Nuclear Enterprises, and local electronic firms were supported, sometimes by direct stakeholdings such as the minority share in Edinburgh Instruments. Third, a market for local subcontractors and component suppliers was generated, although the extent of this was limited by the secretive nature of the industry and Ferranti's vertically integrated structure. Finally, Ferranti personnel played leadership roles in the Scottish institutional apparatus, such as the Scottish Council's Electronics Scheme, the East of Scotland Engineering Employers Federation and the Toothill Report into the Scottish economy (1961).

A separate trend saw multinational electronics companies locate some defence-related production activities in Scotland (Peters, 1990). A near-market location and a favourable political, institutional and policy-funding network encouraged both English and US companies to locate in Scotland. Hughes Microelectronics Europa, a subsidiary of the US defence firm Hughes Aircraft Company, opened a branch plant at Glenrothes, in Fife, to adapt US designs to European markets (Hargreave, 1985:33-4), while Marconi located two manufacturing plants

at Hillend and Donibristle in Fife, with some design and development functions. Ferranti's activities in Scotland also induced a few spin-off firms such as MESL, which became part of Racal in 1979, based at Newbridge near Edinburgh, and the two Dundee-based firms, Laser Ecosse, formerly the Ferranti Laser Product Group, and Albacom, formerly, Ferranti Industrial Electronics Group. Other emergent defence-related firms in Scotland included the anglo-French advanced engineering consultancy company, BAeSEMA, based in Glasgow, which developed out of the former Yarrow design unit, YARD.

Technocratic militarism during the Cold War produced a defence industry in Scotland which was advantaged by state intervention in terms of contracts, technological capabilities, public policy and bail-outs (Law, 1995). Against a contracting defence industry during the 1980s, Scotland was one of the few regions where employment levels expanded. Yet, the outcome of mergers, takeovers and inward investment during this period was that the defence industry in Scotland, in common with industry more generally, came under even further external control. External control, when combined with a changed political, institutional and procurement environment, supposedly made the defence industry in Scotland particularly susceptible to closure and relocation to the south of England. I want to turn next to examine that assumption and the suggestion of immanent workplace resistance in the light of the evidence of recent restructuring.

Paradoxes of the current restructuring

Although post-Cold War cuts in UK defence spending and job losses have hit Scotland harder than most UK regions, the South East, albeit from a much higher base, has been the worst affected region in the UK. In 1992 the south accounted for around half of the spending on defence equipment and employment, the north and north west combined around one quarter; Scotland received around a thirteenth (Defence Statistics, 1994:10). Such figures are limited by the narrow indicators employed, accounting for around a third of total defence industry employment (Lovering, 1993:126). Scotland has also been estimated by Scottish Enterprise to be the most defence dependent region in the UK, with defence spending directly supporting 75,000 jobs, 3.2 per cent of the workforce in 1992, 55,000 of these in civilian employment (SE 1992). On this basis Scotland is clearly an important sub-centre of defence production, particularly in electronics and shiprepair and shipbuilding. According to official figures, in the five years between 1987-88 and 1992-93 over a third of direct defence equipment employment was lost in Scotland (Defence Statistics, 1994:10). The percentage job loss in Scotland was the second highest in Britain after the South East and well above the typical UK region job loss at

around one fifth of 1987-88 employment levels. Further losses of around 9500 to 15,500 jobs were predicted between 1992 and 1995.

Defence industry jobs are unevenly located within Scotland. Fife is the most dependent region in Scotland, with four out of five defence jobs based in the Dunfermline district. In 1991 it was estimated that just under 30,000 jobs in Fife, about one in every four, were either directly or indirectly dependent on defence to some extent, with 14,000 civilian jobs dependent on the Rosyth complex alone. These jobs are typically full-time, male and skilled, based mainly in a handful of mechanical engineering and electronic and electrical engineering firms, owned and controlled outwith Fife, indeed outside Scotland (FRC, 1991). Between 1991 and 1994 around 3,000 jobs had been lost in Fife, and the projection for a further 3,000 to go by 1997 may have already been exceeded. In Lothian, where defence-related work has been the principal support of manufacturing, some 23,450 jobs were estimated to be directly dependent on defence in 1993. These jobs accounted for about one in five of all jobs in manufacturing and 7 per cent of all employment in the region (ELDDI 1995; Dabinett 1993).

The seemingly permanent expansion of fixed and variable capital in the defence industry in Scotland over the previous forty years is now being reversed. Meanwhile, the relatively cosy industrial relations associated with defence plants have been supplanted by a tough-minded commercial 'realism'. There are three paradoxical effects of restructuring. One is that even as privatisation and marketisation supposedly shift price risks from the state and onto private capital the government continues to shape the national defence industrial base. As a monopsonist customer it retains massive market power; it plays a central role in promoting exports; it brokers contracts, for example over the Eurofighter 2000 project; it continues to underwrite much of the military R&D effort; it acts as a catalyst for takeovers in the industry, such as GEC's takeover of Ferranti in 1990 (Clark, 1994:274); and through the DTI and the Monopoly and Mergers Commission determines merger policy in the industry. A second paradox is that as each location comes into competition with each other to save local defence jobs the victor continues to pay a heavy price in job losses and deteriorating working conditions. While in Scotland this has been at least partly successful in preventing a series of outright closures and relocations, employment in the defence industry has been positively anorexic putting remaining capacity further at risk. A third paradox concerns the role of trade unions in mediating the effects of restructuring. Routinised, secure and stable *consensual* bargaining during the decades of capital widening in the defence industry disarmed the trade unions of *oppositional* organisational capacities in the unstable and insecure conditions during

capital narrowing. Union functionaries engaged in managing peacefully the terms of restructuring rarely challenged its logic. Put starkly, by normalising restructuring the role of the union bureaucracy may be acceptable, or even necessary, to pacify recalcitrant worker opposition, but in doing so it strengthens managerial authority and further weakens the organisational capacities of labour. I want to discuss the paradox of plant survival in Scotland first. The nature of workplace unionism will be discussed in greater detail in the final chapter.

Despite the erosion of corporatism and massive job cuts, remoteness from the corporate centre for firms in Scotland has not yet resulted in the expected flight of the industry 'home' to the South and Western core of UK arms production. What seems to matter here is the high levels of operational autonomy that defence firms are able to exercise locally, particularly in research, development and design functions. External *ownership* needs to be separated from *decision-making* and *control* functions. In terms of organisation and the structure of production, little of the defence industry in Scotland performs pure and simple dependent 'screwdriver' functions. GEC Marconi, BAeSEMA and Barr and Stroud, and even Rosyth and Yarrow, are well-established firms operating at the cutting edge of a number of sophisticated technologies and enjoying a large degree of operational, if not financial autonomy. As Peters (1990: 282) argues for electronics, 'It is precisely this defence research which helps authenticate Scotland's claim to being something more than merely another peripheral branch plant agglomeration'. While the twin pull between the corporate centre and the locality has been largely replaced for managers by a 'placeless' obsession with the balance sheet, this does not mean that defence companies have suddenly become mobile and can easily shift specialised physical capital and trained labour acquired over many years. As one manager at GEC-Marconi put it when asked about fears that GEC might transfer production of the EFA radar from Edinburgh to new capacity in Milton Keynes, 'a possible transfer ... doesn't hold water. In all its dealings GEC makes cost-efficiency decisive in allocating costs. It is therefore extremely doubtful [that] EFA will move to Milton Keynes because of the cost burden of setting up production from scratch when it makes far more economic sense to bed production into the site where it was developed in the first place'.

In the defence market the 'follow-on imperative' of securing the next substantial contract is critical to survival. This means mobilising not simply technology and product credentials but political resources. Firms in Scotland are backed by a vociferous media and the institutional and political apparatus known collectively as the 'Scottish lobby'. In the civilian sector the Scottish lobby has been increasingly incapable of influencing the litany of closure decisions

during the 1980s: Chrystler at Linwood in 1981, Lee Jeans at Greenock in 1981, British Aluminium at Invergordon, Plessey at Bathgate in 1982, Caterpillar at Uddingston, Singers at Clydebank, British Steel at Gartcosh and Ravenscraig, Timex at Dundee. Yet even as civil manufacturing was decimated in Scotland, particularly between 1979 and 1981 when 11 per cent of output and 20 per cent of manufacturing jobs were lost (Aitken, 1991:237), defence production flourished. As the pressures in the defence market became fiercer the Scottish lobby rallied behind each bid to place major defence contracts in Scotland, successfully in the case of Yarrow and the orders for the Type 23 frigates and the Eurofighter radar with Ferranti. Even where political lobbying failed in its ultimate aim, most obviously with Rosyth's failure to secure the Trident refits, it twice helped to prevent outright closure of the dockyard, although not the naval base, and helped ensure that a substantial package of surface ship work was allocated to Rosyth dockyard.

Plant closure is not the only option available to capital. Massey and Meegan (1982), for example, identified three forms in an earlier round of industrial restructuring: rationalisation by reducing the labour force; intensification by increasing labour effort in production; technological change by automating the labour process. While automation has not been implemented widely in a defence industry still largely based upon handicraft techniques, rationalisation of labour and intensification of effort have taken place. Fixed capital has also been rationalised quantitatively, 'capital narrowing', and qualitatively through redesigning the labour process, 'capital deepening'. A renewed focus on 'core' activities by companies ensured that ancillary and repeat-productive activities were externalised to outside suppliers of materials, components and even labour. This vertical disintegration of productive processes both externalises the risks of overcapacity endemic to defence production and increases flexibility in the division of labour (Scott and Storper, 1987). Personnel and industrial relations policies were further mobilised to support intensification strategies where previously their main concern was to secure labour peace for uninterrupted absolute levels of output. Yet harsher management regimes have not automatically led to confrontation. Trade union responses have been tempered by fears over the actual survival of 'their' workplace in a hostile market climate. Together, the spectre of losing defence contracts and plant closure, while not completely eliminating industrial unrest, routinely conditioned collective bargaining. Numerical and functional flexibility, mass redundancy, wage freezes, worsening conditions and benefits contributed to a sense that the changed climate would not yield to organised labour. Yet, despite sporadic industrial unrest and evidence of low worker morale throughout the industry the restructuring process has been relatively peaceful with few serious or prolonged disputes.

Where industrial action has been threatened or happened it took two inter-related forms: as a lever to restore the organisational legitimacy of trade unions' role in the workplace or where management over-reached themselves in what proved acceptable or permissible to the workforce. This may explain the inconsistency in Gennard and Kelly's (1991) account of managing change at Rosyth dockyard. They argue (1991:86, 88) that, on the one side, the trade unions 'responded positively' to the changes under BTL 'within an acceptance of market discipline', but, on the other side, manual unions retained 'traditional craft attitudes to job control and an adversarial view of industrial relations'. Both union acceptance of and adversarial attitudes to change are, however, aspects of a dynamic process bound up within the tension between union and workplace survival. In the first half of the 1990s, survival of 'our' workplace foregrounded union organisational capacities, hindering union action independent from and opposed to the market restructuring actions of their 'own' companies. Where industrial action has been taken, on the surface it appeared to be over routine bargaining issues, usually pay. However, these disputes were also an expression of a deeper underlying resentment and disenchantment among the workforce which the union bureaucracy were often unwilling to give a voice to. Lacking official expression fatalism can set in, making membership mobilisation at some later point against some worse fate an even more difficult task.

Where technocratic militarism attempted to materially bind the enclaves of defence dependency in Scotland to the UK state it was premised on the ideological certainties and strategic rationale of a bi-polar Cold War world. The new defence industrial base in Britain is being forged through the political 'pull' of a global system of still nationally prescribed states and the economic 'push' of internationally organised production. Such 'market-based' restructuring means the abandonment of technocratic militarism for a kind of marketised militarism. One discernible trend is that the defence industry is beginning to resemble something of the pre-1914 giant oligopolies and monopolies within an increasingly international arms market. Yet within the emerging uneven geography of the arms industry the tendencies in the re-division of labour have not all been in one direction. Scotland remains an important bastion of British arms production while some regions in England are in terminal decline. Unlike the interwar period when industry in Scotland was characterised above all by sectoral specialisation, a legacy of advanced technological capabilities covering diverse product markets has been inherited from the Cold War. In the case of the rationalization of warshipbuilding capacity, it was partly the placing of three contracts in Scotland, the order for three Type 23 frigates

placed at Yarrow, the collaboration between VSEL and Kvaerner's Govan yard to share work on a helicopter carrier for the Royal Navy and the refit of RFA *Sir Bedivere* at Rosyth, which finally ended shipbuilding at Swan Hunter on the Tyne. Moreover, the only Scottish-owned player with a corporate interest in these end moves is the Weir Group, who have maintained a stake in the management consortium at Devonport which, of course, eclipsed Rosyth for the nuclear submarine refits. Thus the defence industry in Scotland is deeply integrated, corporately and politically, at the British level, the level of the nation-state. This makes further dislocation of the industry in Scotland fraught with political dangers for whichever government is in office. This also means that the logic of further restructuring may be resistible after all.

Part Two of this thesis examines two case studies to shed further light on the historically conditioned nature of the processes involved in restructuring. This involves a detailed discussion in each case of the relations between state, capital and labour as they intersect in particular places and at particular times. In this way a more total understanding can be arrived at in Part Three, one which tries to avoid the one-sidedness of examining, say, state policies and arms technology, or management strategy and structure, or labour, work and trade unionism, in isolation from their mutually conditioning relationship.

PART TWO

CASE STUDIES

Chapter 3

Rosyth Dockyard: From State to Private Management

Beside the almost obsessive attentions of historians and social scientists to the managerial structures, ownership patterns, product technologies, labour processes and trade unionism associated with British shipbuilding, the naval dockyards have, in contrast, been almost completely ignored (Lunn and Day, 1997a). Yet for much of the eighteenth and nineteenth centuries, and beyond into the twentieth, the Admiralty was one of the biggest industrial employers in Britain (MacDougall, 1983; Ashworth, 1960:90, Haas, 1994). In 1907, for example, the dockyards were the second largest employer in British manufacturing industry (Shaw, 1983) and by 1914 employed over one quarter of all British shipbuilding workers (Haas, 1994:3). The importance of the dockyards grew further between the wars as private shipyards slumped. Dockyard employment fluctuated with war and threats of war, as Table 3.1 indicates. In the nineteenth century Britain's industrial lead had given it an advantage in equipping its navy and establishing itself as a world imperialist power (Kennedy, 1988:151-158). The dockyards were an indispensable part of the state-organised international enterprise. The southern yards were connected to the nodal points of the British Empire, through dockyards and bases at Gibraltar, Malta, Singapore, Hong Kong, Australia, South Africa, and Bermuda, as well as a host of smaller facilities including Alexandria, Halifax and Jamaica.

Table 3.1: Employment levels in British dockyards, 1687-1914

Year	Employment	Year	Employment
1687	1,185	1852	9,960
1711	6,399	1858	12,215
1714	8,500	1865	18,297
1814	14,000	1870	11,276
1822	10,400	1890	18,000
1830	7,700	1905	33,700
1833	6,000	1914	43,000
1848	11,722		

Source: adapted from Haas, 1994

Within this global network the southern English dockyards were pre-eminent. Scotland would remain a peripheral location for the global royal dockyard complex until the First World War. Although a small dockyard operated at Leith during the Napoleonic Wars its share of total dockyard spending was negligible at 0.5 per cent in 1813 and 0.2 per cent in 1817 (Gunning, 1983: 55). Throughout the nineteenth century it was assumed that any danger to Britain would come from France, largely explaining the geographical distribution of the dockyards (Hislam, 1908:91). Even when this view proved inadequate, as in the Crimean War when Russia became the enemy, a proposal in 1855 to build a dockyard on the east coast of Scotland to serve as a Baltic base was rejected because of cost and problems in recruiting sufficient shipwrights to the existing yards (Hamilton, 1993: 200).

As Britain's youngest and Scotland's only naval dockyard Rosyth's development differed from the historic English yards in significant ways. Although a dockyard had been proposed at Rosyth as early as 1903, Admiralty prevarication delayed its opening until 1916 when the Royal Navy limped into the still unfinished yard in the aftermath of the battle of Jutland. But only nine years later Rosyth was abruptly closed under naval economies. By the mid-1920s the model workers' housing scheme of Rosyth's 'Garden City' was transformed into 'the town that was murdered', a full decade before the more famous case of Jarrow (Wilkinson, 1939). However, after rearmament for World War Two reopened the dockyard Rosyth prospered, eventually outlasting all but one of the traditional English dockyards into the 1990s. Alongside this fitful historical development labour organisation at Rosyth represented a further contrast to the English yards. Situated on the River Forth at the southern edge of the militant West Fife coalfields, the newer workforce at Rosyth did not fully inherit the quiescent labour traditions of the older southern dockyards. A seven week strike in 1972 and a rash of disputes between 1978 and 1981 certainly seemed to bear out Rosyth's reputation for strong workplace organisation and labour combativeness. Yet in the late 1980s all this changed. Rosyth was now presented as a model for co-operative labour relations under a new Human Resource Management regime introduced by the yards' commercial managers, Babcock Thorn Ltd (Gennard and Kelly, 1991).

This chapter is concerned with the historical context of Rosyth's development. Only within this can more recent shifts in dockyard employment relations be understood. Three core elements made up traditional dockyard employment relations at the historic yards. First,

'Whitleyism' was a particular form for regulating industrial conflict; second, 'lobby politics' prevailed as a form of political bargaining; and, finally, the 'service ethos' functioned as a repertoire of accommodative symbolic and material resources. Whitleyism refers to the routines and outlook derived from the Whitley system of centralised bargaining, institutionalised in various committees locally and detailed procedures for grievances and discipline. Dockyard lobby politics have their roots in centuries of deferential petitioning of the Admiralty, employing the moral economy terms of loyalty and service. Modern lobby politics, however, depend upon corporate appeals to the national interest with the overall aim of exerting persuasive pressure on MPs and Parliament. The policy process is viewed as rational, neutral and open to specific, defensive campaigns at moments of perceived danger to the interests of dockyard workers. Historically, dockyard work cultures emphasised 'competitiveness, diligence, permanence, loyalty, localisation, relative relaxation with regard to the pace of work' (Casey and Dunkerley, 1984: 149). Southern dockyard life fashioned through inter-generational trade and kin continuities a hierarchical system of imposed and informal rewards and penalties, centred around a permanent core of 'established' male workers and a wider group of less secure 'hired' workers. A dockyard service ethos developed out of this sense of employment continuity and a meritocratic dockyard promotion apparatus functioned to reward seniority and sustained an ideology of service: to the Crown, dockyard and workplace community.

As a way of showing the specificity of dockyard employment relations a contrast will be drawn between the home-based historic dockyards and the overseas colonial ones. Between these two basic models, historic and colonial, the case of Rosyth sits uneasily. Following that, the historical trajectory of dockyard management and labour is set out. Only in this context can the tensions at Rosyth be appreciated. Rosyth's origins and later development will then be discussed. Various proposals to reform dockyard structures were made at regular intervals. Until commercial management was introduced in the mid-1980s, thoroughgoing reform was always surrendered to other, short-term expediencies. The introduction of commercial management and the failed opposition to it will form the final part of this chapter.

Rosyth dockyard: between historic and colonial

Until the late 1950s a global network of overseas and home dockyards spanned the nodal points of the British Empire. At the core of the imperial naval-industrial complex two basic kinds of dockyard could be distinguished. On the one side were the micro-state colonial

dockyards at Malta, Hong Kong, Singapore and Gibraltar and, on the other, the historic metropolitan dockyards on the south and east coast of England: Portsmouth, Chatham, Plymouth and Sheerness. Table 3.2 gives an indication of the scope and scale of the post-war decline of the global dockyard network. Of the eleven yards operating at the start of 1950 only two, Rosyth and Devonport, survived into the 1990s.

Table 3.2: Closure and employment levels at major British Dockyards world wide

Dockyard	Opened	Closed	Employment levels		
			At peak	**1980**	**1995**
Portsmouth	1212	1983*	17,200	7,400	-
Devonport	1690	-	16,400	12,700	4,700
Chatham	1559	1984	14,500	6,000	-
Malta	1814	1959	10,800	-	-
Rosyth	1916	1925**	7,000	5,900	3,300
Hong Kong	1856	1959	4,200	-	-
Gibraltar	1740	1983	4,000	1,300	-
Pembroke	1809	1925	3,600	-	-
Sheerness	1665	1960	3,300	-	-
Singapore	1937	1969	3,200	-	-
Haulbowline (Queenstown)	1806	1925	2,000	-	-
Bermuda	1798	1950	1,200	-	-
Simonstown	1861	1957	600	-	-
Total	13	2	88,000	33,300	8,000

Source: adapted from Brown, 1983, p272.
Notes:
*Portsmouth was reduced from full dockyard status to Fleet Maintenance and Repair Organisation status in 1983.
** Rosyth re-opened in 1938.

Within the international dockyard complex uneven combinations of social scale, ideology, work cultures and organisation made for varied forms of organisational capacities. Yet, Baldacchino (1990: 116) suggests that the high levels of group solidarity and militancy found among dockyard workers in Malta might be a worldwide phenomenon. However, workers in

the historic English dockyards this century earned a reputation for accommodative, dependent, divisive and bureaucratic union organisation. Social scale, politics, employment relations and ideology are important for organisational capacities: whether dockyard workers are in the realm of Lilliput or at the metropolitan heart of Empire matters. While it has been noted that some Maltese workers developed a positive anglophilia under the fortress economy, the dependent, small-scale and concentrated nature of Maltese society magnified social, cultural and class differences. Micro-state life gave colonial structures on the island, particularly the dockyard, an all-pervasive presence over the economy, politics and even residential areas and language. Employment security in the dockyard was all the more important since there was no 'physical hinterland for the indigenous Maltese to retreat to' (Sultana and Baldacchino, 1994: 15). Prevented by the Admiralty from occupying any post above supervisor Maltese workers were cut off from the competitive promotion system. Moreover, union organisation at colonial and historic yards differed quite markedly. In Britain fourteen shipbuilding and engineering unions were represented on the various dockyard committees; at Malta there was only one, the General Workers Union. Politically, the GWU were virtually indistinguishable from the left-wing Maltese Labour Party, while dockyard unions in Britain policed the trench between 'economics' and 'politics' vigilantly, engaging only sporadically in defensive parliamentary lobby politics.

In conditions quite different from Malta, Rosyth also stood apart from the historic southern dockyards. From a virtually derelict site in 1938, abandoned thirteen years earlier under the inter-war naval cuts, Rosyth remained open and even flourished during the long years of Cold War 'normality'. Yet, initially, traditional dockyard forms of worker acquiescence in the overall goals of the organisation had little purchase at Rosyth. First, closure in the 1920s had given the lie to dockyard labour market traditions of service, security and stability. Second, dockyard managers and workers often occupied quite alien national and class-bound cultures. Third, redundancy or the threat of redundancy, in common with the southern yards, was a recurring feature at Rosyth down to the 1960s. Until then Rosyth lived a precarious existence employing a mere tenth of the total workforce in the four British dockyards; Portsmouth and Devonport had around a one-third share each and Chatham about a fifth. Then, in 1963 Rosyth's fortunes were transformed when it became the refit yard for Polaris submarines. By 1980 Rosyth was the biggest single-site employer in Scotland; employment levels were over one-third higher in 1980 than in 1950. In contrast, employment levels were halved over the same period at Portsmouth while at Chatham they declined by a third (Speed, 1980: Vol.II:F-

1). A further indication of the changing character of the work undertaken at Rosyth was that the rising number of technical and professional non-industrial workers increased from one in ten of the total workforce to around one in four by 1980.

The general character of the British dockyards before 1914

This section will describe something of the general character of the British dockyards, focusing on dockyard organisational structures, management practices and labour relations. An indication will be given of the powerful, centuries-old dockyard traditions into which Rosyth was inserted when it opened in 1916, together with some of the organisational changes introduced before 1914.

Dockyard organisation and management

Because the state, through the Admiralty, was both employer and customer dockyard organisations were quite unlike those of privately-owned shipbuilders. As an early advanced industrial formation, the dockyards continued to be organisationally marked by earlier forms long after the conditions which first gave rise to them were by-passed elsewhere in private industry. Employing some of the largest concentrations of skilled industrial workers in Britain (and thus the world), the state had direct responsibility for managing advanced, complex ship refits and construction. Management structures, labour markets, labour relations and labour processes were a strange blend of dockyard peculiarities combined with more general industrial practices. For nearly three centuries between the eighteenth century and 1985 the dockyards were the subject of regular official and unofficial inquiries in an attempt to reform dockyard structures and deep-seated customs; these mostly failed. In 1803, for example, the attempt to reform 'the variegated deep-rooted abuses' of 'idleness, incompetence, waste and embezzlement' by scrutinising the timber supplied to the dockyards antagonised the timber merchants and precipitated an 'oak crisis' (Marcus, 1975:16, 163). It was not until after 1886 that a watershed in dockyard organisation was reached. Between the 1880s and 1914 the dockyards began to be drastically modernised and organisation and management improved. It is also towards the end of this period that Rosyth also gets constructed as a major dockyard.

Dockyards exist to equip, refit, repair and, until 1968, actually build ships for the fleet of the Royal Navy. As Admiral Sir William Houston Stewart put it in 1881, 'Dockyards exist to build and repair ships: first, efficiently - second, cheaply, if possible and third, quickly' (in Hattendorf et al, 1993:673). It was repeatedly claimed by the Admiralty that it was cheaper

and quicker to have warships built by the dockyards than by private shipyards (Brown, 1983:275-6). In the heyday of British naval power the dockyards needed to keep up with the latest technological innovations, then proceeding at a rapid rate - first, from sailing battleships to steam batteries, through to screw-propulsion and the ironclads and, later, Dreadnoughts and submarines (Brown, 1983: 11-80). A persistent motif was economy and rationalisation. Admiral Fisher's declared policy of 'rapid shipbuilding' was only repeating in 1900 what the Admiralty position had been in the 1820s, 'Whatever type the French have, we must go one better, and that is a principle which will always keep us safe, and if we build as quickly as we ought to build, we ought to commence after they are well advanced and have the more powerful vessel afloat beforehand' (in Mackay, 1973: 336-7, 342-3). Within this 'late build' policy the dockyards were central.

Nineteenth century liberals simply assumed that state dockyards were inefficient compared to private yards due to what Cobden in 1862 called 'dockyard profligacy'. The dockyards were indeed encumbered by labyrinthine bureaucratic decision-making processes and centralisation. Management in the dockyards was restricted by a centralised and depersonalised system of 'management by correspondence' (Haas, 1994). Instructions were received from naval headquarters in London on a daily basis and a vast store of detailed standing orders was accumulated. Dockyard organisation was doubly ineffectual with centralisation, leaving little scope for management discretion, responsibility and flexibility, combined with a local decentralisation and a lack of a unified management function within the dockyards. Management was divided into seperate departments, the most important being the Constructor's department under the master shipwright. This dual organisational deficiency resulted in a '... very heavy correspondence occasioned by over-centralisation, and the necessity of having to perform an oppressive number of ancillary duties which should have been delegated, distracted the master shipwrights from the active management of operations' (Haas, 1994:4). An inquiry in 1861, for instance, found that 'there had long been a lack of unified control of the yards, inadequately defined responsibility, ill-organised subordinate departments, and consequent duplicated effort and waste' (in Hamilton, 1993:215). Over-centralisation of decision-making and excessive attention to detail resulted in a middle management tier of professional officers 'cramped by the weight of clerical work[1] imposed

[1] Clerical work was only just becoming a lower status occupation, even though it mainly involved the drudgery of longhand copying. Before the late Victorian period it was considered genteel and 'gentlemanly' and irregular hours seem to have been kept. Only after 1866 did a thorough division of

upon them to the injury not only of their professional work but of the supervision of the labour under their control' according to a Parliamentary report in 1881 (Hattendorf, et al, 1993:673). In response, the Controller of the Navy urged the need for reform of the dockyard bureaucracy but, typically, within limits:

> While I depreciate any radical change in the present system of administration in the dockyards which would probably be upset again if there were a change of government, I think much real good may be done by consulting the views and opinions of the superintendents and the professional officers, by freeing the working officers from the hands of clericalism, placing more confidence in them, giving them more encouragement, retiring the elderly, removing the obstructive and promoting rapidly those who have proved themselves to be active, zealous and clever in their profession. (Hattendorf, et al, 1993:674).

Ashworth (1994) traces this excessive centralisation and bureaucracy to the early nineteenth century 'culture of calculated precision' and shows how for the dockyard reformer Samuel Bentham dockyard efficiency and economy needed to replicate the practices of private industry through an ideology of self-interest, constant vigilance and duty.[2] But with the Royal Navy operating as both client and owner, poor accounting techniques made it difficult to compare public and private shipbuilding costs. Moreover, wrong or misleading information about costs or the progress of work made it difficult for the Admiralty, itself notoriously inefficient, to have a clear idea about what was actually going on in the dockyards. Moreover, the conservatism of the Admiralty and geographical isolation from the main shipbuilding-engineering centres delayed the introduction of new materials and techniques. Compared to the

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clerical labour begin to get established at the Admiralty, with the creation of a class of 'writers' but it was not until the First World War with large female typing pools, based on a rigid sex division of labour, that tasks became thoroughly specialised (Hamilton, 1993:245).

[2] Bentham's brother, Jeremy, is well known these days for the uses Foucault made of his image of the panopticon as the paradigmatic disciplinary technology. In fact, in the late eighteenth century Samuel Bentham planned a panopticon-type building for a factory in Russia with the supervisor's office at the centre of the building to monitor the workers' efforts. Ashworth (1994) convincingly shows that the panopticon principle of functional vigilance was central to Samuel's attempts to reform dockyard management, in particular to establish accurate, standardised accounting procedures to monitor waste and assist management. Central to the accountant's 'calculating eye' in Samuel's reform of dockyard organisation was the need for labour visibility:

> Assimilating the whole of the Dockyard business to a private manufacturing concern, the Admiralty Board may be considered as the masters of it, giving orders as to effects to be produced by their servants. But, being masters of several such establishments, they need at each of them an *eye*; that eye at a dockyard is the superintendent. But, that he may never be biased in his judgment, he should not habitually interfere in any operative business, or in the arrangement of any account. (quoted by Ashworth, 1994:409)

world lead in metal working and engineering of individual private shipbuilders, the dockyards have been charged with 'plodding and costly empiricism' (Hamilton, 1993:220). Until the founding of the Royal Corps of Naval Constructors in 1883, an emphasis on the 'practical men' produced by hands-on dockyard apprenticeships repeatedly overcame the pressure for a training in the theoretical principles of scientific naval architecture, represented by the three successive dockyard Schools of Naval Architecture instituted in the nineteenth century (Brown, 1983:26-50).[3]

Even for the most determined, reform of dockyard organisation always seemed to be elusive: '[o]ld ways and prejudices, mind-sets and bureaucratic inertia, reinforced by the antiquity of dockyard organisation, were big obstacles to change of any kind' (Haas, 1994:5). As late as the beginning of the twentieth century dockyard organisation continued to be plagued by the organisational forms of the eighteenth century. Haas (1994:145) summed up the situation in the late nineteenth century:

> ... the suffocating system of centralised management by correspondence was in no way relaxed. The chief constructors continued to be so loaded down with non-professional paperwork (mostly accounts) as to be left with too little time for enforcing work-discipline, which remained as great a problem as ever. There was, moreover, no effective means of controlling the cost of production, or even knowing what the cost was, despite the number of accounts the compilation of which consumed so much time.

While some organisational reforms were realised after 1885, with clearer lines of responsibility established between the dockyards and the Admiralty, it was not until after 1905 that anything approaching fundamental reform was carried out. The superintendent of Devonport, Vice-Admiral Henderson, under the influence of American management theory, introduced a range of innovations at his own yard and wanted the superintendent to exercise managerial power 'without reference or interference' (in Haas, 1994:173). Yet the decentralisation of authority proposed by the Fisher Committee removed the powers of intervention of the superintendent and passed detailed managerial responsibility to civilian departmental chiefs, now renamed Manager, Constructive Department and Manager, Engineering Department, with a similar range of powers as managers in private industry. Churchill, as First Sea Lord took decentralisation and civilianisation a stage further six years

[3] Despite the unfavourable comparison, it should be noted that private British shipbuilders were also inured in the traditions of crude empiricism, probably to an even greater extent than the dockyards (Pollard and Robertson, 1979).

later, although naval opposition ensured that a civilian general manager was still not introduced. The Sea Lords at the Admiralty resented creeping civilianisation and, after 1916, the belated all-out industrial mobilisation of the dockyards for total war restored in part the centralising impulse and naval control (Haas, 1994:180-83).

Thus, unlike family-run private shipbuilding companies the dockyards were traditionally headed by a senior naval officer as Director of Dockyards who, until the early 1960s, was aided by civilian managers who oversaw the division of work into the specialised, professional Departments: Constructive, Engineering and Electrical Engineering. Culturally, naval officers were a world apart from their civilian counterparts in private shipbuilding. Senior officers enjoyed a conspicuously privileged lifestyle ensconced in the grand old buildings in the historic southern yards,

> The more senior officers would be provided with an official residence in the Dockyard where, in the days of cheap servants, they could live in some style, though in more recent years these old-fashioned houses have become a nightmare to run without domestic help. (Brown, 1983:272).

Elitism and autocratic high-handedness ran through the officer caste, a special arrogance developed out of the naval ascendancy within Britain's Imperial 'splendid isolation'. Yet this did not translate well to work-discipline. Until the 1880s work was supervised directly by 'leading men'. Coming from the same craft culture and social background as the men they supervised and continued to work alongside, leading men were party to the ideology of craft autonomy and the informal sanctions of workgroup solidarity. Attempts were made to draw them closer to management notions of control by changing their title to 'inspector' and granting them the privileges of salaried status (Haas, 1994: 130). Above inspector level was the foreman who was provided with a writer for record keeping functions and a panopticon-like portable office to oversee the general work area. Yet supervisory control remained weak to the extent that plainclothes policemen cycled round the yard in an effort to crackdown on the 'open scandal' of 'malingering' (Haas, 1994:158). By the turn of the century inspectors were being replaced by working chargemen, in a reversion to the old leading hand system of supervision. But despite the meritorious promotion system first line supervision remained weak just as craft autonomy on the job proved resilient.

Dockyard labour

Just as dockyard management and organisation diverged from private shipbuilding so dockyard workers stood apart from private shipyard workers in Britain. Until the mid-nineteenth century, a system of nepotism, patronage and favouritism was encouraged by dockyard officers, where service, family and craft identities freely intermingled. Such a tradition had roots reaching into the seventeenth century. But for the many workers on the margins of the favoured system it only increased resentment. Yet the outlets for labour resentment were very narrowly channelled. Three forms of redress existed: the right of petition, industrial action and parliamentary pressure. On the occasion of the annual Admiralty dockyard visit, petitions could be submitted. The Admiralty dealt with these in a high-handed fashion on a unilateral and arbitrary basis with no right of appeal. Petitions were typically written in the reverential language of 'obedience', 'loyalty', 'duty' and so on. Yet petitioning had a resonance because the moral economy of established customs had deep currency in the dockyards. Shipwrights at Chatham in 1756, for example, defended an entitlement to 'chips', lengths of surplus wood, in defiance of an Admiralty order and a strike of shipwrights in 1775 resisted 'taskwork', an early form of piecework, replacing fixed payments (Hattendorf, et al, 1993:528-9; 533-5). In 1804 shipwrights from Portsmouth petitioned the Admiralty after 'the sweet refreshment' of the one and a half hour dinner break was abolished because it 'damps our spirits and exertions ... as it was an ancient custom for us' (Hattendorf, et al, 1993:546-7). Putting pressure on MPs representing dockyard constituencies was often a more successful approach, especially for resisting redundancies. After an election riot in Devonport in 1835, for instance, the defeated candidate complained, 'it is incredible how many men, who are eating the daily bread of government have taken an active part against them and how little of the tradesmen of this town who depend altogether upon government expenditure, are grateful for it' (Hattendorf, et al, 1993:653-4). In 1893 the Conservatives lost five dockyard seats in protest at poverty wages. This gave rise to the charge that it was impossible to run the dockyards in the 'same satisfactory way as private establishments' (in Haas, 1985:211). Above all, dockyard workers established a degree of autonomy during working time which appears to be unique in British shipbuilding. What the Admiralty in 1886 called 'idleness' seemed to be prevalent, 'the superior officers appear to be powerless ..., and the inferior officers [i.e. supervisors] seem to be either apathetic or too much in the hands of the men' (in Haas, 1985:211).

Despite the move to iron ships after the 1860s the dockyards continued to be conditioned by practices developed around wooden sailing shipbuilding. The main union in shipbuilding, the Union Society of Boilermakers and Iron Ship builders, for instance, refused to organise in the dockyards while the Associated Shipwrights' Society established a toehold. After a number of boilermakers, recruited for their skill in working with iron plate, were summarily dismissed in 1861 after striking for higher pay, dockyard shipwrights, who traditionally worked in wood, volunteered to replace them and learn new skills in ironworking (Brown, 1983:274, Haas, 1985). Thus, while the wood-working shipwrights were supplanted by metal workers throughout private shipbuilding, dockyard shipwrights remained at the core of the dockyard labour process by working in both wood and metal. This enabled the Admiralty to avoid the demarcation disputes endemic to private shipbuilding, it kept wage rates for metal work low and had the advantage of making shipwrights functionally flexible 'all round men'.

Dockyards operated dual internal labour hierarchies, segmented into 'established' men, who were regarded as permanently employed and superannuated, and 'hired' men, whose employment was untenured and regarded as temporary (even after thirty years of service). Introduced formally in 1833 as a core labour market during peacetime, the permanent establishment initially covered almost the entire workforce of 6,000. The establishment could be supplemented by temporary labour when required, who could then apply to be included on the more secure hired list. Table 3.3 shows how the establishment fluctuated down to 1915 swamped by the hired list during periods of employment growth. The unusual degree of job security coupled with the relatively high degree of work autonomy for those on the establishment among dockyard workers created particularly favourable conditions for the development of a conservative 'labour aristocracy', a concept whose relevance is much disputed for other groups of workers. The implications for labour organisation were obvious: 'Established workers could thus feel some real degree of security, and this inhibited trade union organisation at the dockyards' (Crossick, 1978: 72). The same study contrasts the lack of strikes in Kentish London dockyards, even though they were in close physical proximity to the militant dockland area.

Table 3.3: Dockyard establishment, 1833-1915

Year	Number on establishment	Establishment as a percentage of the total workforce
1833	6000	99%
1855	9621	90%
1859	10850	89%
1864	9621	59%
1890	4680	26%
1906	6000	20%
1910	6500	16%
1915	10000	25%

Source: Haas, 1994.

Figures are approximations where the data was incomplete for precise calculations.

Dockyard workers were thus internally divided by craft and labour market status. Casey and Dunkerley (1984) have argued that dockyard management and organisation, workforce heterogeneity and the political and ideological environments mutually combined to hinder trade unionism down to the years before 1914. Directly coercive forms of control were rarely employed by the Admiralty with overlapping systems of rewards and ideological reinforcements sufficient to secure low union membership and political conservatism among dockyard workers. A spirit of 'competitive individualism' was fostered through a meritorious promotion system and the dominance of elitist, status-ridden shipwrights among the workforce. After three years on establishment workers could sit an examination with the prospect of rising to leading man or first-class status and beyond that to writer, foreman, inspector, converter, measurer and even to master. As Crossick (1978: 71) argues, 'Opportunities for promotion allowed confirmation of that element in artisan ideology which trusted in the possibility of progress for the disciplined and hard-working'. This was true, above all, for shipwrights who exercised strong craft control over the labour process and enjoyed a relatively relaxed work effort with economy and speed subordinate to quality and finish. Craft patriotism went hand in hand with a bellicose British nationalism. Isolated from the main centres of trade unionism and working class radicalism immediate prospects for dockyard workers depended on the national threat of war. And, finally, the paternalism of the establishment system usurped a role for trade unions in organising mutual insurance,

petitioning institutionalised a deferential but customary channel for grievances and, ultimately, the Admiralty refused point blank to engage in collective bargaining and responded with mass dismissals to any industrial action. For such major industrial workplaces, trade unions were only officially recognised as late as 1892.

Even those at the bottom of the heap, the large numbers of unskilled labourers, were themselves divided by eleven different wage rates. Again political pressure on MPs seemed to offer the best course of action. In 1894, the Tory opposition pushed the Admiralty to become a model employer for the rest of British industry and subsequently raised dockyard wage rates, albeit modestly, and introduced the eight hour day long before the rest of British industry or the private yards (Haas, 1994:166). For a while the model employer approach seemed to work as the dockyards boomed and dockyard worker grievances subsided for the two decades immediately before the war. Yet pitifully low wages continued as the main source of labour unrest in the dockyards. Wherever possible the Director of Dockyards looked to substitute highly paid workers like mechanics for lower paid workers. Dockyard wages had always been substantially lower than in private shipbuilding. Between 1873 and 1890, for example, there was no wage increase. The Admiralty argued that dockyard wage levels were adequately compensated by a range of benefits unheard of in the private sector, particularly continuous employment, long term job security and pension rights.

Underlying resentment within the dockyards was re-ignited by the spread of militancy in Britain during the years of the Great Labour Unrest. By 1913, the dockyards were affected by external events as the Boilermakers threatened a national strike and employers a lock-out. Dockyard workers were in an unusually strong position. As war loomed, the workforce was eighty per cent bigger than it had been in 1906, the last year in which a wage rise had been granted. The Admiralty took the threat of rising dockyard militancy seriously enough to fear for 'the balance of Naval power and ... national safety' (in Haas, 1985:221). The model employer measures were now little more than a memory. Even the security of 'establishment' status was threatened with abolition by the Treasury in 1906. The patronage-service-family system threatened to fail to contain the militant mood. Instead the threat of dockyard strikes in 1913 resulted in an Admiralty proposal to increase the establishment, 'to provide that steadying element which has so well operated to secure the Dockyards from Labour troubles in the past' (in Haas, 1985:224); even the Treasury reluctantly accepted an increase in establishment. It was continuous employment at steady wages which prevented outright

dockyard rebellion in the quarter of century before 1914, the antithesis of which had made private shipbuilders centres of worker discontent.

By the time that Rosyth opened deep dockyard traditions were in the process of transition. Organisationally, decentralisation and civilianisation of authority had begun to erode the excessively bureaucratic command structure. However, many problems remained and the 1914-18 war postponed any consolidation of the reforms of the previous decade. In particular, paternalism, establishment, rigid discipline codes, weak supervisory authority and strong craft control continued to exert a powerful hold over British dockyards. Worse still for the Admiralty was that the model employer stratagem failed to stem trade unionism from increasing, albeit unevenly, among dockyard workers. As Lunn and Day (1997a) note, external forces could permeate dockyard politics and culture, undermining the 'particularities and peculiarities of the dockyard system and its distinctive ideological constructions'. With the proposal for a new dockyard at Rosyth, a greenfield site, the Admiralty might have been expected to learn the lessons from past organisational deficiencies and working practices from the start. However, delays in commissioning Rosyth and the crisis of war ensured that many of the old problems resurfaced but in a context of rapid growth and displacement.

Rosyth: dockyard and town

We are desirous in Scotland, if possible, to make
Rosyth a model town for the world
Lord Shaw of Dunfermline, 20 March 1909

On 5 March 1903 Balfour, the Prime Minister, announced to the House Of Commons that a new permanent Naval Base was to be built on sound geological foundations at Rosyth. Existing dockyard capacity was insufficient for an expanding fleet and the growing German fleet made the construction of a naval base in the North Sea a priority (Hislam, 1908:93). Under the Naval Works Act of 1903, 1248 acres of land, within site of Newhaven, where James IV built his doomed Scottish navy in the 16th century, were acquired for conversion into a naval base. The Admiralty predicted that Rosyth would become a 'second Portsmouth' with the Base generating a local population of 30,000. Set in a rural backwater, Rosyth consisted of a handful of farms with the biggest nearby town, Dunfermline, three miles away to the north, and the nearest village, Inverkeithing, set one mile to the west. Local labour had

no connection to shipbuilding and repair industries, with industry centred around the staples of textiles, especially linen, paper and mining.

Although Rosyth was intended to be a major base and repair yard the precise details of the Admiralty plans were vague. In December 1907 Lord Tweedmuir, First Lord of the Admiralty, announced that construction was to go ahead, with enough docking facilities to accommodate 22 warships. However, opposition against Rosyth was led within the Admiralty by Lord Fisher, who was reluctant to switch resources from shipbuilding to repair and support facilities. In 1909, things shifted with Jellicoe's support for a dockyard on the east coast. The years of neglect now became 'a matter of the utmost gravity and open to much criticism' (in Mackay,1973:419). Fisher saw the coming dominance of the submarine as rendering North Sea ports 'uninhabitable'. Against this Jellicoe argued, 'My fear is that this submarine question may be used as an excuse to avoid spending - what appears to me essential money - on dock accommodation on the East Coast ... I hope you will agree with me that nothing that can occur in the next 8-10 years should lead us to abandon the provision of necessary docks on this coast' (in Mackay 1973:417, 419). Fisher was compelled to relent, albeit reluctantly, having successfully held up development for six years.

The 1908-9 Estimates stated that the work included the construction of a large basin, a dock for Dreadnoughts, and numerous workshops. A completion date was fixed for 1918. Easton Gibb and Son of Newport, Monmouthshire, won the contract to construct the naval base in 13 February 1909. The project was a massive civil engineering task, to transform a vast expanse of mud and water into a large, integrated repair complex, with some of the biggest docks in the world at that time (Harrison, 1950: 60). The contract was divided into two sections: the first part, to build a submarine depot, boat slip, pumping station and an electric power-house, was to be complete within four and a half years; the second stage, to build a large basin and entrance lock, was to finish within seven years. Construction work began almost immediately on 12 March 1909. Six thousand workers were employed on the 'engineering feat' at peak times (Harrison, 1950: 66; *Dunfermline Press*, 13 February 1909). Arriving from parts of rural Ireland and the southern half of the Outer Hebrides, many construction workers encountered a hostile social, cultural and religious environment. In December 1910 it was estimated that the majority of the 1686-strong workforce came from outside Scotland; 31 per cent came from England, 28 per cent from Ireland and 41 per cent from Scotland (in Gleave, 1987:39).

Conflict ensued between Gibb and Admiralty engineers over the construction of a sea wall and the positioning of an entrance lock, with 'official ineptitude and indifference' holding up the building of the huge graving docks, quays and buildings (Harrison, 1950: 64). Despite later hagiographic accounts that 'Gibb's ideas on industrial welfare were well ahead of their time' and a 'pioneering spirit' pervaded Rosyth as workers got to 'like their employers and the place' (Harrison, 1950: 67), struggles over wages, conditions and housing broke out. With increasing pressure on Easton Gibb to complete the dockyard on time, work went on day and night, seven days a week, working from 6am to 5.30pm on dayshift and 6pm to 5.30am on nightshift. In April 1912 this led to the dismissal of workers, mainly those from the Highlands and the Hebrides, after they refused to work on the Sabbath. After further industrial action Easton Gibb were forced to make concessions and take back the sacked workers. Navvies successfully struck in September 1912 to secure a wage rise. Catholic workers were also viewed suspiciously by the company, with around 25 per cent of the 3500 workers in June 1913 estimated to be Irish. A Catholic chapel was built in nearby Jamestown beside the largest of the lodging houses and the local priest was reported to be 'a very strong supporter of the Union, wore the Union badge in his coat, and instructed the Irish navvies that they must become members' (IHS, 1982:89).

Bureaucratic, technical and political disputes ensured that Rosyth was only around two-thirds complete at the outbreak of war and the war itself created labour and material shortages (ICE, 1927). Strategically, Rosyth proved highly significant, repairing ships damaged at Jutland in 1916 and acting as a base for Royal Navy access to the North Sea. The rapid influx of workers transformed the locality surrounding the Naval Base, from a sparsely populated, undeveloped rural backwater. While Rosyth never became a 'second Portsmouth' it was to be the location for one of the first working class housing projects in Britain financed and sponsored by the central state, with Garden City principles replacing the traditional Scottish tenement style (Gleave, 1987; Rodger, 1989:16). And while the town became more of an 'industrial village' than a 'Garden City', it nevertheless represented a serious attempt by the state to improve working class housing. As a radical departure from the usual style and source of working class housing supply in Scotland the Rosyth project had to overcome the legacy of nineteenth century state neglect. Local by-laws encouraged tenement housing for the working class and the machinery of the state had little experience of planning, organising and executing house-building, let alone an entire town. In 1910 the Admiralty accepted the Garden City idea

for Rosyth after approaches by the Local Government Board for Scotland (LGBS) but were equally determined that they would accept no direct responsibility for the scheme or that the financing of the housing should not come from naval Votes.

Nevertheless, the exigencies of war created the conditions then for a radical departure for state intervention in working class housing; developments at Rosyth were a harbinger of far-reaching consequence. Despite competing demands on materials and labour and high wartime inflation costs on building materials, between 1915 and 1919 1,872 houses were completed. The first houses were occupied in May 1916 with a steadily rising rate of occupancy to 750 by December 1917; and a further 500 houses were built in each of the next two years. Rosyth took shape quickly in the space of these few years: a railway station, Rosyth Halt, was opened in 1917 and in 1918 the tramway between Dunfermline and Rosyth was opened; in 1918 the first school in Rosyth was opened but quickly had to be extended to cope with the growing population. A sense of the 'polyglot' character of Rosyth is indicated by the various places of worship provided for the new population in 1917: Presbyterian, Episcopalian, Methodist and Roman Catholic (*Dunfermline Press*, 1959:67-69).

Housing became a spark of unrest for the humanity thrown together at Rosyth. The Royal Commission into labour unrest reported that housing, as a 'cause of unrest, as well as a danger to public health', was 'specially acute' in 'the district of Rosyth dockyard' (Cd 8669, 1917:para 8). The Scottish Labour Housing Association blamed the Admiralty directly for the housing crisis at Rosyth. In the summer of 1919 the agitation over rents culminated in a rent strike. A public meeting of 2000 was held in May demanding a 50 per cent reduction in rents. Following the example of the Glasgow rent strikes, street captains were appointed for each street to organise immediate defiance by the strikers when the rent collector arrived. With a blow of the street captain's whistle tenants would rush outdoors onto the street leaving the rent collector unable to identify who lived where. As in Glasgow, women played a leading role in the action, banging trays, pots and pans and harassing the collector, who despite police presence on each street failed time after time to collect the rents. Mass meetings were addressed by Patrick Dollan, the Glasgow ILP councillor and on 29 July Sylvia Pankhurst advocated direct action to a 2-3,000 march to the courtroom in Dunfermline where rent strikers were facing eviction notices. The following week women carried banners declaring 'Children's Boots Before Rent' to picket workers at the dockyard gates after the workers had decided to take industrial action in support of the rent strikers. The picket seems to have been

effective since the strike at the dockyard was supported 'overwhelmingly'. Despite all this activity the Dunfermline Sheriff court upheld the eviction notices served on the rent strikers and the strikers morale declined. On August 23 a mass meeting unanimously called off the strike although the Admiralty refused to reduce the rents.

By 1920, 5,700 workers remained employed in the dockyard, with an additional 1,200 employed on continuing construction work. But the employment boom at Rosyth was to prove short-lived. In 1921 short-time working was introduced and a year later large scale lay-offs of non-established workers began. The construction of a great naval base to rival historic Portsmouth and Plymouth was abandoned by the Admiralty in 1922. Worse news followed in September 1925 when the government announced that Rosyth and Pembroke were to be put on a 'care and maintenance' basis. Over 4,000 workers were discharged at Rosyth while established men returned to the southern dockyards. Dunfermline Town Council, who had made a large investment in infrastructure for Rosyth at the Admiralty's behest, local politicians and dockyard trade unions lobbied to save Rosyth. But the Admiralty's decision was already taken. Schemes to lease dockyard facilities to private shipbuilders were rejected by the Colwyn Committee, which had been set up in 1919 to consider economies in the dockyards. The argument prevailed that the Royal Navy required dockyard capacity to be retained for its exclusive use.

The closures had two inter-related sources. First, an orthodox drive for economies in public spending, known as the 'Geddes Axe', after the head of the cuts committee, Sir Eric Geddes, and the limits on naval programmes imposed by the Washington conference of 1922. Pembroke had already been singled out in 1921 for closure as 'the yard least adequately equipped to meet modern naval requirements' (quoted by Lunn and Day, 1997b; Day, 1996: 83). Why was Rosyth, Britain's most modern dockyard, closed with this rationale in mind? Ward (1988: 84-7) argues that Rosyth was sacrificed and the southern dockyards kept open in a social, political and cultural context which tended to work against Rosyth and favoured the more traditional yards. The 1925 closure was foregrounded against an Admiralty engaged in a desperate struggle to resist proposals to commercialise dockyard operations, earlier industrial unrest at Rosyth during the war, the wider management structures of the Admiralty, and local workplace and community traditions and cultural attitudes towards the Navy. Rosyth's closure was not based on technical grounds but on political and cultural ones.

For the next dozen years Rosyth had an inglorious existence, from the 6,000 employed during the war only a few hundred were retained on essential maintenance work. Rosyth was also used as a Navy strikebreaking centre during the General Strike to ship supplies across Scotland. And, as at Pembroke, dockyard facilities were leased to private shipbreakers, Metal Industries, for dismantling German and British battleships (Buxton, 1992; Day, 1996). Before the Second World War then Rosyth had functioned as a dockyard for a mere nine years, from 1916 to 1925, with an interlude of fourteen years as a virtually derelict site, save the couple of hundred engaged on shipbreaking. Rosyth town was emptied, as workers moved out to find work, with some houses occupied by commuters from Edinburgh and surrounding towns. War would once again transform Rosyth's fortunes, only this time its effects would prove more long lasting.

Wartime labour organisation at Rosyth

Due to interwar neglect an entirely new workforce had to be created at Rosyth after 1939. Recruited late into the rearmament drive industrial workers at Rosyth tended to be local and traditional dockyard labour relations tended to be weak. Women workers and dilution were introduced at Rosyth to a greater extent than for other dockyards and outside industry. By 1944, for example, 25 per cent of the Rosyth workforce was composed of women workers compared to between 12 and 16 per cent at southern yards (Inman, 1957: 149). While many workers were transferred from England these were mainly 'mobile' non-industrial civil servants. Although pay was determined centrally, labour management functions in the dockyards were decentralised to the level of autonomous professional departments, (Constructive, Mechanical, Electrical). Such autonomy largely depended on labour continuity and identification with organisational goals: at Rosyth, however, *dis*continuity was at a premium. A critical 1941 report by the Ministry of Labour identified unusually high levels of absenteeism, idleness and 'subversive elements' at Rosyth (Stewart, 1993: 151). Experimentation with a participatory worker discipline regime failed because recalcitrant workers 'treated it with contempt' and management resented trade union incursions into their control prerogative (Inman, 1957: 287). Nevertheless, unions at Rosyth, including those influenced by Fife Communists, were committed to the underlying principles of Whitleyism: industrial peace through participative negotiating machinery. The role of Fife Communists at Rosyth, after 1941, was one of balancing between support for uninterrupted war production and defending workers' conditions (see Selkirk, 1967: 41-2; Docherty, 1992: 155-7).

While Whitleyism developed by fits and starts at Rosyth, the tradition of lobby politics took off rather more smoothly. Where lobbying had been tried, and failed, to prevent closure in the 1920s, the rhetoric of 'national unity' during the Second World War structured the possibilities for a renewed emphasis on lobby politics at Rosyth. As the unions argued, 'Today we are stronger, more united as a result of our bitter experiences in the lean years. No longer can we tolerate the irresponsibility which has in the past characterised the Admiralty's handling of Rosyth' (*Rosyth*, nd: 3). In August 1944 Rosyth shop stewards initiated a campaign for retention and extension of the dockyard. The Rosyth stewards demanded a modernisation programme for the yard, government control of and a fairer distribution and planning of industry in Britain, a fairer share of Admiralty work and facilities for the trade unions 'to examine all aspects of production and a greater say in determining the programme of work at all times' (*Rosyth*: nd: 7). Behind them the stewards drew in a veritable 'popular front' of support across Scotland, ranging from landowner Lord Elgin to William Gallacher, the Communist MP for West Fife. A range of arguments were made for the retention of Rosyth as a major British dockyard: strategic, industrial, infrastructural and social (Rosyth, 1947). Above all, however, it was argued repeatedly that Rosyth was the 'only real link which the Scottish people have with the Royal Navy, and it is in the interests of the Nation [sic] that this tie be strengthened rather than weakened or severed' (Rosyth, 1947: 8). Gallacher typified such national-populist appeals when he argued at a meeting in Dunfermline that it was,

> scandalous to suggest a country like Scotland, a country that pioneered naval construction and training should be without a naval establishment ... Imagine closing Chatham and Portsmouth and make Rosyth a fully developed naval base ... the English lads would not stand for it. Rosyth must be built up into a fully developed naval establishment ... in the name of Scotland. (*Rosyth and Inverkeithing Journal*, 26 December 1945).[4]

Within the workplace, however, the dockyard service ethos had little resonance among industrial workers at Rosyth; until the 1950s few local Rosyth workers had acquired established status. It was precisely the cleavage between established southern non-industrials and non-established local industrials that made it difficult to implant the service ethos at Rosyth. Non-industrials sold their labour power under advantageous terms: they started work at 8.17 am while industrials began their shift at 7 am, they were better paid, had more

[4] In fact when Chatham and Portsmouth were rundown in the early 1980s little resistance took place beyond ritualised forms of token campaigning and lobbying.

generous leave, superior working conditions, sick and pension entitlements and better promotion and transfer opportunities. The gulf in employment conditions was exacerbated by the wide cultural chasm between mainly local industrial labour and dockyard managers drawn invariably from the south. By the 1950s, however, the range of dockyard promotion, employment benefits and 'establishment' status were being opened up increasingly to locally-recruited labour, a process largely accomplished by February 1969 when, as part of a trade-off for dockyard reductions, establishment was extended to all industrial employees with five or more years service. As David Owen (1969:3), Under-Secretary of State for the Royal Navy, put it in a message to dockyard workers, 'We want to work in the closest partnership with the Trade Unions with the object not only of making the dockyards more productive and efficient but, at the same time, seeing that those who work in them obtain a fair share of the benefits which these improvements should bring'.

As the complex of benefits and promotional opportunities became available at Rosyth labour relations lost much of their distinctiveness from southern dockyards. In short, inherited dockyard traditions such as Whitleyism, lobby politics and the service ethos were reshaped, adapted and modified to suit conditions at Rosyth.

Organisational reforms

This section discussed the ways in which organisational deficiencies were identified and reforms of state management of the dockyards were variously proposed. When Admiralty consent was eventually achieved for organisational reform two main approaches were taken: an incremental approach centred upon change within the existing organisational set-up and, from the 1970s, a structural approach centred upon transforming the overall organisational status of management, culminating in the introduction of commercial management in 1987. A more extensive role for the private sector models in the second Conservative term forms the over-arching context for structural reform. Above all this context is marked by the hostile attitude of the Conservative government to public sector trade unions. Finally, the consultation process is briefly discussed.

Studies into dockyard organisation and efficiency were conducted in virtually every single decade of the twentieth century. As we saw above, periodic investigations, from the nineteenth and eighteenth centuries, indeed all the way back to Samuel Pepys, were part of an older tradition of political regulation of the dockyards (Haas, 1994). Part of this tradition too was

the organisational conservatism of the Admiralty. As early as the 1920s the Admiralty were alerted to organisational shortcomings in the light of changes elsewhere in industry. Reformers tried to grapple with the uniqueness of dockyard activities, on the one hand, but, on the other, introduce modern organisational and work methods within the dockyard context.

As fewer ships got built in dockyards they increasingly specialised in refit and repair work. Five basic types of work were performed:

> i. Normal refits; routine refits and repairs carried out at regular specified time intervals.
> ii. Long refits; longer, more comprehensive and detailed refits at roughly six yearly intervals.
> iii. Modernisations; major up-date and renewal of ship's systems and structures, ship's function unchanged.
> iv. Conversion; major alterations to ship's systems and structures changing a ship's function.
> v. Special refit; additional to normal-long refit cycle to carry out specified major alterations and additions. (HC 263, 1962: 19-20).

Periodic normal and long refits were considered part of the 'natural' cycle of a ship's life, whereas specific Treasury sanction was necessary for conversions, modernisations and special refits estimated above a particular sum, (£250,000 in 1962). A range of factors affected the amount and kind of work to be carried out when ships docked for refit including: a ship's age, the nature of recent service, length of times at sea and between refits, standard of maintenance while in commission, and the extent of previous refit. Thus no two refits were identical. Furthermore, there was no general comparative standard upon which to directly judge dockyard performance against private industry. Dockyard efficiency proved difficult to measure. Where this was attempted, such as when private yards were used in 1905 to augment dockyard repair capacity, the dockyards were usually judged to be more economical. Private sector refit yards did not have the panoply of 'just-in-case' dockyard resources in terms of labour, fixed capital, stores and support services, let alone the conspicuous dockyard advantage of being an integral part of a close inter-personal service culture. During rearmament in the 1930s it proved impossible to obtain a fixed price from private yards for a given package of refit work, despite considerable time spent by dockyards drawing up detailed specifications of work. Comparative measures for dockyard efficiency were thus always

elusive and, except in emergencies, when combined with the highly specialised nature of naval refit work and the weight of organisational closure around the dockyards, market entry from outsiders was precluded. Nevertheless, dockyards, as large industrial organisations employing tens of thousands of industrial workers could not be relied upon to find 'optimum' levels of efficiency. So where an absence of 'market pressures' failed to impose organisational change on the dockyards political regulation substituted.

The first serious use of modern management methods for the dockyards was proposed in an unpublished 1927 dockyard study chaired by the Deputy Chairman of Metropolitan Vickers Electrical Company, RS Hilton. Hilton recommended changes to the accounting system and, significantly, the structure of management (HC 245, 1950-1: viii, xx-xxi). Most of the recommendations for an improved costing system were accepted and implemented by the Admiralty. However, on dockyard organisation the committee were divided between a majority wanting 'far-reaching' organisational change and a minority opposed to radical restructuring. The majority argued that time spent in senior dockyard posts by naval officers was too short to acquire a detailed knowledge of dockyard operations and that naval officers anyway lacked appropriate industrial and commercial management experience for effective control of the dockyards. To remedy this a civilian should be recruited as Director of Dockyards and a civilian General Manager appointed to assist the Admiral Superintendent. Should Admiralty objections to a civilian assistant to the Admiral Superintendent prove 'insuperable' the majority recommended that a civilian General Manager should directly replace the Admiral Superintendent. A minority objected to the lack of knowledge a civilian would have of service conditions and the needs of the Fleet, which were 'more important qualities in the Director of the Dockyards than knowledge of industrial and commercial management, and that a civilian would hinder close relations between the Fleet and the Dockyards' (HC 245, 1950-1: xxi). Predictably the Admiralty accepted none of the majority's recommendations and accepted only 'those sections of the minority report which recommended the continuance of the *status quo*' (ibid.). Three command-based objections were made by the Admiralty: first, an appointment to General Manager 'would cause jealousy among their professional colleagues'; second, they would lack knowledge of Fleet operations; and third, they would be 'prevented by regulation and tradition from giving orders to the executive officers who command the ships in the port' (ibid.: xxviii).

Evidence from the dockyards was taken next by a parliamentary committee in 1940-1, although no report was made. Around the same time the Shaw committee reported in 1940 on dockyard labour and, in 1941, a Lloyd's assessor reported to the Ministry of Labour, singling Rosyth out for particular criticism (Stewart, 1993:250-1). In 1945 an Admiralty committee compiled yet another unpublished report which recommended leaving the departmental basis of the personnel function unchanged, that personnel staff and record-keeping should be standardised and that internal and external welfare facilities should be improved. The 1945 committee opposed a personnel manager at each yard because 'the complexity and size of the dockyards made it impracticable and undesirable to concentrate in one department all the functions of labour management' (HC 245, 1950-1: xxiv). By 1951, the Select Committee on Estimates could note that only the continuation of departmental personnel management had been implemented by the Admiralty, i.e., no change. Of the remaining proposals: the standardisation of personnel records was continually deferred because of financial restraints, exacerbated by the demands of rearmament for the Korean war; the standardisation of personnel staff was realised in the person of departmental Deputy Managers but personnel duties were performed across the departments unevenly; little progress was made on outside welfare activities such as sickness and housing, while internal welfare facilities such as canteens, toilets and amenity centres did not even reach Factory Act standards. Under state control the dockyard management enjoyed 'Crown Immunity' which exempted them from prosecution under Factory Act legislation.

As the state balanced between the competing demands of warfare and welfare during and after rearmament for the Korean war, dockyard activities came under more exacting parliamentary scrutiny. Yet, while the total war economy of 1939-45 induced wider industrial, technological, political and economic changes, in many ways cleaving the 1920s from the 1950s, the Admiralty continued to blithely resist organisational reform: in the 1950s as in the 1850s. The 1951 Select Committee 'had to go about their task of examining the efficiency and economy of HM Dockyards, not by examining figures, but by taking evidence on the pace of work in the yards, the relations between management and men [sic], the structure of management, and the provision of material, tools and buildings' (HC 245, 1950-1: ix; see also HC 259, 1951-2). In taking this approach the committee were satisfied that 'the general level of work [effort] remains very high and that there are no instances of gross inefficiency' (HC 245, 1950-1: ix). Despite this, twenty one recommendations were proposed to improve 'the general efficiency of the Yards and the spirit of management'. These were limited to specific internal reforms,

including the setting up of a centralised personnel function, the appointment of a General Manager and some limited financial control for dockyard Superintendents.

However, setting up a co-ordinated personnel function under the direction of a senior personnel officer was once again opposed by the Admiralty as a 'retrograde step' on the premise that 'Personnel management, important though it is, is but one aspect of management as a whole'. Yet Admiralty appeals to a unitary system of management were seriously misleading. For industrial organisations as large, complex and varied as dockyards, where as many as 131 different trades and grades were engaged (HC 245, 1950-1: viii), co-ordination, integration and forward planning of work, materials and labour were essential pre-requisites for executing jobs effectively and on time. Meanwhile, managers in each of the three departments, Constructive, Mechanical and Electrical, though technical specialists in their own departmental discipline assumed direct responsibility for personnel, planning and materials. Closely entwined with the navy, departmental managers had little contact with wider developments in industry. All Engineering managers were serving naval officers, Electrical managers could be either civilian or naval, while the Constructive managers, 'the most senior among the managers' (HC 245, 1950-1: xxii), served the greater part of their careers at the Admiralty or in the dockyards as members of the Royal Corps of Naval Constructors (Brown, 1983). As a later report put it,

> The disadvantage of the division of the Dockyard into three almost self-contained 'professional' departments was that each tended to concentrate on getting its own share of the work done, without sufficient regard for the problems of others, there was over-lapping of responsibilities, and officers were confined to an unnecessarily narrow range of work. (HC 263, 1961-2: vii).

At all costs, however, the power and authority of management by the autonomous professional disciplines had to be preserved. A senior personnel officer, the Admiralty complained, would either be 'ineffective or tend to undermine the responsibilities of the Departmental Managers for the management of their own staffs and labour' (HC 91, 1952-3: 6-7). Moreover, Admiralty objections were even more forthright in their opposition to a General Manager being appointed. The Admiralty were

> unable to overcome the doubt whether the change ... would be in the best interests of the dockyard administration. The fundamental feature of Dockyard organisation has *for long* been the large measure of autonomy left to each Departmental manager to conduct the

> affairs of his own Department in both technical and administrative matters. Any General Manager superimposed on the Departmental structure must, if he is to exercise his functions to the full, end by encroaching very largely on the responsibilities of the Departmental Managers ... (HC 91, 1952-3: 8, my emphasis).

Thus, in keeping with Admiralty insularity, the fragmented Departmental structure itself was never put in question. Instead the Admiralty accepted a need for some kind of managerial overview by 'experimenting' with a Deputy Superintendent (Industrial) who would perform planning, finance and personnel functions of a remarkably similar kind to those they dismissed as over-centralising for the Senior Personnel Officer. And although the Admiralty conceded some discretionary control locally over finance they reasoned that 'it would almost certainly be wasteful to allocate resources to individual Superintendents for expenditure entirely at their own discretion, and *without any knowledge or control on the part of the Admiralty* of the objects to which Superintendents would devote these resources' (HC 259, 1951-2: 11, my emphasis). In direct contrast to their reasoning for denying any role to either a General Manager or Senior Personnel Officer for co-ordinating operational matters locally, only the Admiralty could co-ordinate and determine expenditure because only they were sufficiently removed to obtain an overall, strategic view of total dockyard activities. Thus even the mild internal reforms proposed in the early 1950s were impeded by an Admiralty firmly entrenched in traditional organisational structures, with authority and responsibility within the dockyards based on narrow, fragmented technical specialisms and, outwith, on a thoroughgoing centralisation of command at Admiralty headquarters (HC debates, 1952-3, 512: cc 1901-66).

Introduction of functional management

Just a few years later, however, the Admiralty's technicist view of internal dockyard organisation began to change. By 1956 dockyard organisation was beginning to be recognised as failing to reflect wider technological and organisational changes. After a visit that year by 'a top level team' to study dockyard organisation in the United States Navy Department, followed by a ten day conference at Sundridge Park, senior dockyard managers became increasingly convinced of the merits of advanced functional planning and production management. An Admiralty working party produced a detailed report, never published, which recommended a complete reorganisation. Functional reorganisation, it was argued, would prevent unnecessary duplication of activities and the operational fragmentation caused by professional departments. Three inter-related objectives were outlined: first, staff of the professional departments were to be re-distributed according to the specialised function they

performed - planning, production, personnel, maintenance and finance; second, a new planning system was needed to integrate the diverse activities of the various trades and grades; and third, arising from the previous objectives, and the introduction of civilian General Managers (GM), 'the ability to formulate promptly single authoritative management policies, decisions and action, i.e. *the abandonment of co-ordination by consent*' (Sansbury and Sutherby, cited by Brown, 1983: 299, my emphasis). A civilian GM, who might be a retired naval officer, was recommended by a separate sub-committee examining professional staffing in order to differentiate the industrial management of the dockyards from the Naval administration of the base, which came under the Port Admiral.

Chatham dockyard piloted functional reorganisation between 1958 and 1961. After a twelve month delay it was introduced to Rosyth between 1961 and 1964, while at Devonport implementation was delayed until 1967 because of a heavy workload in aircraft carrier modernisations. Thus it was well over a decade since reorganisation was agreed before it worked its way through to all the yards. Implementation was designed above all to avoid upheaval within the dockyards: 'Disturbance was to be minimised, change made firmly but gradually, and at all times the support and enthusiasm of the management and workforce was to be obtained' (Brown, 1983: 298). Reorganisation also required investment in both fixed and variable capital. An increase of 1,500 'non-productive' staff was planned for by the Admiralty (HC 263, 1961-2: Q567) At Rosyth, delays in restructuring were caused by a shortage of professional officers (HC 263, 1961-2: Q915, 925, 1042-5), and a lack of office space to accommodate centralised management. As the GM, Mr Mann, complained, 'Before we were scattered all over the place, and you cannot get a combined organisation until you can gather the people under the same roof ... I cannot get the three Managers under one roof or combine the drawing office or really develop a combined set-up' (HC 263, 1961-2: Q914, 916). A large Central Office Block was being built to resolve the accommodation problem of the combined management structure. Attracting professional staff was even more difficult. The Admiral Superintendent at Rosyth noted that 'Headquarters have been extremely embarrassed by the inability to provide sufficient supervisory and professional officers to meet the increased needs' (HC 263, 1961-2: Q1041). Salaries were thought too low to recruit staff from outside industry while staff in the southern yards seemed reluctant to transfer to Rosyth:

> There is a tendency for people from southern yards to object, if they can, to service in Rosyth. As a measure towards improving that position I believe the Admiralty are

considering a definite maximum tour of duty at Rosyth so they can say, 'If you go to Rosyth you are not there for the rest of your life'. (HC 263, 1961-2: Q930)

The legacy of a discipline-specific organisation meant that there were few specialists for non-technical functions. For example, the new Personnel Superintendent at Rosyth was a non-specialist who had covered personnel issues as part of the duties of being the Deputy Electrical Engineering Manager, and whose career had been entirely in Admiralty service with no direct experience of personnel functions in outside industry (Q942). Yet he acquired overall responsibility for the new, wide-ranging Personnel Department being set-up. Personnel comprised four divisions: an employment division to recruit and interview labour and to take up grievances with the trade unions; a training division covering both management and apprentice training; an administrative division for mainly clerical work; and an employee services division for welfare issues inside and outside the workplace, including sickness, housing, canteens and amenity centres (Q945). Reform was thereby contained within existing dockyard structures with a shift from a management based upon the three core disciplines of the old professional departments to a more specialised, functional management. While Admiralty opposition was overcome, belatedly, functional restructuring preserved intact the 'one arm' philosophy that kept a massive industrial organisation in the thrall of naval command. As such it was a compromise but one which left overall organisational status and goals of the dockyard unchallenged.

Towards commercial management

A more serious structural overhaul was proposed by Sir John Mallabar's report in 1971 (Cmnd 4713). Drawing on the idea of accountable management proposed by the Fulton report of 1968 into the reform of the Civil Service, Mallabar recommended a trading fund arrangement for both the dockyards and the Royal Ordnance Factories (ROFs). He later described how a trading fund, while keeping the dockyards within the public sector, would make performance measurable:

Our idea of a trading fund was that you set the dockyards up with a working capital and left them to stand on their own feet. If they were operating efficiently there would be a profit at the end of the year, or at any rate they would break even; if they were badly run, or one was more expensive than the other, it would show up in the profit and loss and balance sheet of that trading fund in the year in question. Much as it would show up in the accounts of the National Coal Board too. (HC 362, 1980-1: Q473).

From his wartime experience of agency factories, Mallabar rejected agency management for the dockyards as 'the worst of both the commercial and the Government Department worlds'. The next detailed study of the dockyards, the 1980 study chaired by the Under-Secretary of State (Royal Navy), Keith Speed, again favoured a trading fund arrangement. In the event, only the ROFs became trading fund organisations. Dockyard reform was restricted to the introduction of bonus incentive schemes as a means of increasing the work effort of labour. The main problems identified in earlier dockyard studies persisted: ambiguities in the dockyard/Navy relationship; constraints of Civil Service status of dockyard organisation; and inadequate accounting procedures. As core elements in an undifferentiated 'one arm' service philosophy, a confusion of responsibilities and accountability existed between the Navy, as customer, and the dockyards, as supplier. Historically subordinate to the needs of the Navy through a common service ethos, typified by the dockyards' efforts for the Falklands, navy demands on the dockyards were to have its ships operational, in best condition and seaworthy as early as possible. Planned programmes of work were frequently disrupted to perform unexpected emergent jobs deemed a higher operational priority. Where accurate known costings were unavailable or the customer relegated the price of work below a higher appeal to service interests, the customer-supplier relationship became a formality. Naval staff, acting as monopsonistic customer, lacked accountability for the cost and performance of work carried out to their specifications. Dockyards, on the other hand, as a near-monopoly supplier, lacked the incentives and pressures of commercial trading relationships for efficient production.

By the 1980s dockyard operations came under the Navy Department of the Ministry of Defence. Ultimate control continued to rest with the Admiralty Board. In 1984, the Public Accounts Committee (HC 342, 1984: para 6) distinguished the responsibilities and accountability of the Naval Department and the dockyards in this way:

> Within the Naval Department it is the responsibility of the Naval Staff to determine operational requirements; the extent, timing and priority of programmed refit and repair work; and the urgency of any unscheduled, short-term tasks. The Dockyards for their part are responsible for carrying out Naval staff requirements; for the economical and efficient management of the ship refit and support programme; and for the cost-effective use of their manpower, capital facilities and other material resources.

In other words, the Naval Department made strategic decisions concerning the programme of work while the dockyard management exercised detailed control over the execution of the

programme. Dockyards were often, correctly, compared to 'jobbing shops' for the Navy, with 'Naval staff requirements' overriding all other considerations.

Following the introduction of functional management, individual dockyards came under the day to day control of the General Manager (GM) who, since 1969, reported to the Chief Executive Dockyards (CED) at the MOD Headquarters in Bath. Functional management, however, resulted in as many as eight layers of management between the Technical Supervisor (TS) and the General Manager (Speed, 1980: Vol. I: 29). As predicted, between 1950 and 1980 there had been an explosion in the size of dockyard management. By 1980 there were over 8,000 non-industrials, an increase of 328 per cent compared to 1950, although around 3,300 of this growth is attributable to the redesignation of certain formerly industrial grades, such as recorders in 1977 and technical supervisors between 1953 and 1970, as non-industrial (Speed, 1980, II: F1).

Civil Service constraints on dockyard management blunted its effectiveness. At the level of senior management blurred accountability was evident in the mediating role of CED. He reported to the Chief of Fleet Support (CFS) who, as a member of the Admiralty Board, allocated resources for dockyard operations. Thus situated, CED played 'an active role firmly placed between the policy making centres of the Fleet, the Ministry of Defence, the Civil Service Department and the Royal Dockyards' (Brown, 1983 :305). As the key element in this linkage, CED mediated the confusion between customer and supplier; accountable through CFS to the Admiralty Board for dockyard operations without exercising control over the allocation of resources and constrained by Civil Service rules and procedures over the management of these resources.

The principles of the Civil Service, the consistent application of general standards and norms and hierarchical organisational procedures, were enshrined in the voluminous MOD Manuals for dockyard operations. The Civil Service reward structure valued generalist administrative and technical expertise, resulting in an atomistic division of labour and discontinuity in the decision-making process, contrary to the continuity and inter-relatedness of ends and means needed for managing a complex, large scale industrial concern (Blunden, 1989 :212-220). Civil Service traditions of promotion 'from within' maintained what Speed called 'undue turbulence in the top posts', effectively keeping out managers with industrial experience. In 1980 such turbulence meant that:

> 60% of the senior managers have been in post for under two years and nearly 40%, including the Chief Executive himself, have moved in the last 12 months. Less than 10% have held the same post for more than four years (Speed, 1980:29).

Such a high turnover rate diminished management's authority in its dealings with subordinate managerial grades, trade union representatives and the workforce, who tended to have significantly less career mobility. Civil Service rules also created a tendency for disciplinary issues and industrial disputes to be referred 'up the line' rather than resolved at the lowest possible level.

As discussed above, the crucial managerial spheres of pay and recruitment were determined centrally with no delegation downwards for labour costs, the absolute size of the workforce or its composition. Throughout the 1980s, the government's fixing of targets to reduce the size of the Civil Service arbitrarily froze the mix of skills, trades and experience of the residual workforce after 'natural wastage', retirements, discharges and resignations had taken place. In the early 1980s around 380 workers left the dockyard every year through 'natural wastage' (Rosyth, 1985: 9). The specialised jobbing nature of refit work means a particular division of labour is needed at definite stages in the productive process; numbers-as-a-target hindered the co-ordination of these complex tasks. National pay bargaining took a key costing decision out of the hands of dockyard management. Management could have little influence over those workers with a skill in short supply in the local economy who left to take up better paid work.

The workforce itself was divided into non-industrials, mainly supervisory and clerical grades, and industrials, subdivided into craft and non-craft workers. The co-ordination and allocation of these categories of workers to the work that became available as a refit was being planned or progressed was a complex activity. A 'just-in-case' approach to materials and labour was adopted to cope with wide workload fluctuations at different points in the refitting process. In 1983/4 labour costs composed 46 per cent and materials 33 per cent of total costs at Rosyth (Rosyth, 1985: 8). Excess or 'surge' capacity was required to meet emergencies or to prepare the Fleet for war readiness or, more usually, to undertake emergent repairs or rectify operational defects, which could not be planned for in advance. The under-utilisation of resources that were retained for such contingencies made the yards open to the charge of inefficiency; a charge compounded by claims of structural and organisational management deficiencies. As the Levene report put it, '... the lack of the normal market forces meant that

the dockyard undertook a wide range of what, in commercial terms, are almost certainly uneconomic activities' (Levene: 1984:1). For example, out of every 100 workers in 1984 less than one third were on average employed on direct work for which the customer paid (Rosyth, 1985: 13).[5] This reflects the elaborate bureaucratic structure supporting dockyard operations, the problem of coordinating work across the range of trades and the relatively generous social entitlements for leave and sickness which together ensured that two-thirds of the workforce were not employed on 'productive' work.

Central to organisational confusion were the accounting methods. Costs were not accurately known and little incentive existed to find out. Different methods of accounting for dockyard operations were used: vote accounting, operating accounts and functional analysis. Operating accounts reflected post hoc the use of resources and were arranged for the purpose of assessing stewardship; they did not allow for a contemporaneous judgement between other competing claims on resources. They were presented as a supplement to the dockyard vote, Class 1 Vote 5, itself widely criticised for being an inadequate account of resource allocation to an industrial establishment. Parliament annually authorised the dockyard vote separately from the vote allocation to the Navy Department, although it was managed by CFS as Accounting Officer on behalf of the Admiralty Board (not CED it should be noted). Unlike the commercial practice of accrual accounting, where all transactions are recorded for any particular financial year, vote accounting recorded only cash payments and receipts that occurred in the year. For instance, it did not account for non-cash liabilities or assets such as stocks held or capital assets; and the 'annuality rule' and 'virement' prevented unspent sums from being carried forward or switched to other purposes (Speed, 1980 Vol. 1 :26). A third figure for dockyard costs were given in the Defence Estimates under the title of 'Functional Analysis of the Defence Budget'. However, this figure was usually less than a quarter of the figure given for 'production costs' (see Rosyth, 1984, Chapter 3 for a fuller discussion). Discrepancies between different accounting methods used for different purposes clouded rather than clarified judgements about the operational efficiency of the dockyards.

Failure to act on earlier recommendations, particularly after the Mallabar report, led to what Speed termed a 'crisis in the dockyards':

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[5] Of the remaining workers, an average of 13 were on leave and holiday, 6 were sick or absent, 17 were managers, administrators, supervisors or clerical workers, 6 were on waiting time, and 26 were

> ...the dockyards are failing to meet the increased needs of the Royal Navy. Management recognises this but lacks authority to respond to the growing difficulties. The workforce is discontented about pay and fearful of the future. Local trade union representatives are dissatisfied with the lack of authority of management to settle difficulties locally and local problems are exacerbated by delay. Job satisfaction among non-industrials is reduced by diffused responsibility and they are disgruntled by the narrowing of differentials (Speed, 1980, Vol. 1 :7).

These then are some of the symptoms of structural malaise. Speed's proposals for a trading fund solution were themselves stillborn due to the 1981 Defence Review and the Falklands war of 1982. The former cut the number of fully operational dockyards from five to two,[6] closing Chatham and Gibraltar and reducing Portsmouth to a repair and maintenance base, concentrating refitting capacity at Rosyth and Devonport (Cmnd 8288, 1981). The concentrated effort in the dockyards to prepare the Fleet for the South Atlantic temporarily diverted attention from organisational reform. However, when Michael Heseltine took over from John Nott as the Secretary of State for Defence in January 1983 he commissioned a report from his 'special personal adviser' on the efficient management of the MOD, Peter Levene, Vice Chairman of the Defence Manufacturers Association and Chairman of the British armament conglomerate, United Scientific Holdings (*The Observer*, 31 March 1985). Levene had been initially appointed, without pay, for a period of six months from 9 January 1984. By 9 February he submitted a preliminary report which contained in all essentials what would become government policy for the management of the dockyards - commercial management.

The reorganisation of defence management during Michael Heseltine's period as Defence Secretary, January 1983 - January 1986, relied on a redefinition of managerial accountability. In a break with the 'one arm' management philosophy, managers of equipment programmes in the MOD increasingly became 'arms length' brokers and purchasers without direct responsibility for the day to day production of services. At all levels of the organisation efficiencies and economies were to be pursued, where practicable, through competition. Resources were to be increasingly redeployed from the support 'tail' to the front-line 'teeth' of actual fighting capability.

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employed on overheads and support work (Rosyth, 1985: 13). And this calculation does not include time lost through industrial disputes.

[6] This, and cuts in the surface fleet, brought about the dismissal of Speed as Under Secretary of State for the Navy.

Heseltine wanted to undermine the notion of protected strategic defence industries where the state always acted as a 'bail out' of last resort or to socialise production in particular locations or sectors. This approach viewed public sector management as compliant to self-interested trade unions who stalled reform and caused inefficiencies. However, something more than barely disguised prejudices and unsubstantiated assertions would be needed to privatise the dockyards. Full privatisation would have made the government responsible for making the dockyards attractive to private industry and investors. At some point this would have required a confrontation with the trade unions to restructure the workforce through redundancies and changed work patterns and organisation. Commercial management, it was hoped, would reduce the problems of implementation and transfer the responsibility for restructuring, in conditions of a declining naval workload, away from the state to a private company with better experience at managing industrial restructuring. In the case of the dockyards, then, a political judgement was made to demur on an outright asset sale. Heseltine claimed that the main objective was to restructure management. As he later put it (1990:72):

> The strategic importance of the yards persuaded us that a straightforward sale to the private sector seemed *on balance* inappropriate. The reader will note the hesitancy, and I acknowledge it. *It was a fine judgement whether to stop at this stage or move to full privatisation*. The urgent need was for effective accountable management and we decided the best way to achieve this was to keep the land and assets in public ownership, and invite tenders for commercial management. (my emphasis)

Nevertheless organisational reform of the dockyards cannot be so easily disentangled from the deep rooted hostility of the Conservatives to public sector trade unions (Heald, 1985). An early indication of this was outlined in an (in)famous report drafted by Nicholas Ridley MP and leaked to *The Economist* in May 1978 which set out plans to counter 'the enemies of the next Tory government', the key public sector trade unions. Bishop and Thompson stress that the privatisation project had as the 'key objective of ownership change...the reduction of the power of the public sector trade unions' (1993: 4). John Moore, as Finance Secretary to the Treasury in 1983, imputed public sector trade union strength thus:

> Public sector trade unions have been extraordinarily successful in gaining advantages for themselves in the pay hierarchy by exploiting their monopoly collective bargaining

> position[7]...public sector trade union experience of previous administrations has given their leaders a taste of political power without responsibility. They are all too ready to seek to involve the Government in the interests of their political objectives if not in the interests of the members. Privatisation decisively breaks the political link (Moore, 1983: 82, 89).

Although subdued in the public presentation of the privatisation programme, trade union officials were well aware of the implied objectives of undermining effective trade union organisation, especially in the context of increasingly restrictive industrial relations legislation (Marsh, 1992). For Conservatives, securing the co-operation of trade union leaders in some collaborative arrangement was not only anathema ideologically but would prolong and inhibit the process of restructuring without even the guarantee of membership agreement for change. The 'management of change' was increasingly to be the business of management alone with trade union involvement sidelined. Heseltine summed up the new management sovereignty at an early meeting with Devonport trade unionists:

> I would never blame the industrial workforce [for the uncompetitive structures of the dockyard]. *If the industrials were too strong and things were going wrong then I would get rid of the management* (TU Side minutes, 6 April 1984; my emphasis).

With this rationale, the government announced commercial management as its 'preferred option' for the dockyards on 17 April 1985. A Defence Open Government Document (DOGD, 1985), outlined the options for reform as commercial management, a trading fund arrangement or two methods of outright privatisation. The government was 'not prepared to contemplate the Dockyards continuing under their present structure and system of management' (DOGD, 1985 para.39).

The commercial management concept was based on the US 'GOCO' idea of Government Owned/Contractor Operated yards. This would allow the assets of the dockyards (land, buildings and facilities, including plant and machinery) to be owned by the government but operated for a fixed term by an agent selected through competitive tendering. The contract

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[7] Public sector trade unions were in fact at a relative disadvantage in the pay hierarchy. Compared to average earnings of the whole economy, public sector pay showed an aggregated disparity of 12.3 percent between 1973 and 1979. Over the five years from 1981 to 1986 the disparity was 10 percent, with a short-lived 'claw back' of 4.5 percent in the first two years of the Thatcher government (Huhne, 1987).

would guarantee a substantial amount of work, the 'core programme', of about 70 percent from the Navy's refit and repair requirements at negotiated prices. The contract system would mean that 'labour only' Employing Companies would have to be set up to ensure the skills and expertise of the workforce would continue to be retained. These companies would be owned by the first contractors and passed on to any subsequent contractor.

A trading fund arrangement under the terms of the Trading Funds Act of 1973 was the second option. Under this the capital assets and liabilities of the dockyards would transfer to the trading fund, with a corresponding liability against the National Loans Fund. Interest would be paid on the loan and the dockyards would be required to meet a targeted financial return on the assets (DOGD, para 9). The workforce would remain in the Civil Service while the government would retain direct control and responsibility for dockyard operations.

The other non-Civil Service options were two forms of privatisation. First, a Companies Act company could be set up by the government. Dockyard assets would be transferred to the company, as would the workforce who would then cease to count as Civil Servants. After a commercial record had been established, government ownership would be severed through a flotation of shares in the company. Through the Memorandum and Articles of Association the government could write-in strategic safeguards by retaining a 'special share' allowing it special powers of intervention. The other form of privatisation would be the direct sale of the dockyards to the private sector. A prospectus would describe a valuation of dockyard assets and estimated future workloads and would invite bids from suitable companies. After the sale the dockyards would be in a similar situation to that of other defence contractors.

Reform within the existing structures and other non-Civil Service options such as a public corporation or a non-departmental body were dismissed by the DOGD. The privatisation options, apparently closer in principle to Conservative preoccupations with liberal markets, were summarily discounted. The trading fund option, as repeatedly recommended by Mallabar (1971), Speed (1980) and the Rosyth trade unions (1984), although consistent with the delegation of responsibility to managers did not go far enough in competitive and commercial terms. The 'relative merits' of the options were discussed against the following objectives:

a. enhancing the fighting effectiveness of the Fleet and preserving vital strategic interests;

b. securing maximum value for money;

c. maximising competitive opportunities;

d. introducing a commercial approach into the Dockyards through:

- a clear separation of the customer from the supplier
- freedom for local managers to manage
- commercial accounting

(DOGD, 1985 : para 20)

Commercial management was 'preferred' because the strategic assets of the dockyards would remain in government ownership; the periodic tender competition would introduce an added incentive to efficiencies; and it could be introduced within the shortest practicable timescale (para.35). While it was admitted that a trading fund would introduce commercial disciplines and preserve strategic assets it would remain within Civil Service numbers and expenditure constraints and would not be subject to the 'spur' of periodic re-tendering. Privatisation options could protect strategic assets through a 'golden share' mechanism or the market bargaining strength of the government as customer and commercial disciplines would be introduced. However these would take longer to implement because of legislation and the need to establish a commercial trading position to attract potential bidders or the asset sale would be undervalued. Again the added incentive of periodic tenders would be foregone in this option.

Conclusion

Dockyard organisation proved highly resistant to restructuring. Under the old Admiralty and later the MOD dockyard management came under regular scrutiny but to little effect. This was partly a result of trying to balance Naval demands for dockyard capabilities within finite resources. However, it was also to do with meeting Cold War contingencies through a nuclear technological fix, which brought closure for some yards and expansion for others. Rosyth's fortunes changed with nuclear refitting. Nevertheless, the state settled for dockyard effectiveness during the Cold War by preserving surplus capacity at the expense of efficiency and economy. Attempts to redress the imbalance relied on internal reforms of management structures. Still there was no way of knowing the extent of inefficiencies and diseconomies.

The Thatcher government introduced commercial management to restore liberal concerns with efficiency to dockyard operations. Some of the problems with the public/private compromise of commercial management will be discussed in Chapter 11. The next chapter turns attention to dockyard workers and their trade unions to assess the potential obstacles to dockyard reform posed by dockyard workers and their organisations.

Chapter 4

Labour organisation at Rosyth

This chapter builds on the previous chapter to suggest some of the ways that traditional dockyard systems of authority and control were mediated locally at Rosyth. Here Rosyth's location in Fife was significant, as was its absorption of engineering and shipyard workers from elsewhere. Yet, non-dockyard influences were not simply poured into Rosyth in a one-way process. This would be to mistakenly assume the prior success of Whitleyism, the service ethos and lobby politics in generating worker incorporation at the other dockyards. Research suggests that worker practices and attitudes were more uneven and complex at the southern yards than is generally understood (Lunn, 1992; Lunn and Day, 1997). Rosyth's singular position as a Scottish dockyard with a local activist tradition is insufficient as a guide to the mediation of militancy and paternalism within the routines of work organisation and the employment relation. It is not a question of artificially counterposing acquiescence to resistance but rather of understanding how these were worked for in particular conditions at Rosyth, as well as the impact of more general influences.

This chapter will, therefore, concentrate on how the employment relation, the effort bargain and labour relations were understood by dockyard workers. Wherever possible, this will be given in interviewee's own words. Beginning with recruitment and apprenticeships, a sense of dockyard life will be given. Work organisation and the peculiarities of warship refitting are then described. Next, workplace unionism in the context of centralised bargaining and Whitleyism is considered as at once stultifyingly bureaucratic while also on occasion sanctioning militancy and sectional strength. The test of this was the introduction of commercial management into the dockyards.

Dockyard workers: incomers and insiders

The expansion that followed the modernisation programme to accommodate the Polaris refits at Rosyth in the late 1960s and early 1970s established Rosyth as one of the most significant employers in Scotland; *the* most significant engineering employer on the east coast of Scotland. Two basic kind of worker met in Rosyth dockyard. One grew up locally and entered the dockyard as an apprentice straight from school The other came into the dockyard from outside industry.

Each influenced the other, giving Rosyth a peculiar mixture of worker militancy combined with traditional dockyard structures of paternalism.

In the expansion for Polaris refitting, labour was recruited from the declining traditional engineering and shipbuilding centres on the west coast of Scotland and from smaller engineering workshops in Fife and Edinburgh. Through kin and occupational networks workers were 'strongly advised' to relocate from engineering and shipbuilding towns like Clydebank and Greenock to Rosyth for 'long term job security'. Moreover, the MOD supply of housing to incoming 'essential' workers was particularly attractive. After a six week stay in the dockyard's industrial hostel one worker recruited in 1976 was offered a big batch of keys by the SSHA and told to take his pick of the houses at a new housing estate, Camdean, then being constructed at Rosyth (Interview). A sense of job security and a new house only compounded the culture shock within the workplace itself by workers with wider experience of the engineering industry. Incomers remarked on the peculiarities of the dockyard compared to outside industry: its size, the nature of supervision, ample tooling and materials, relaxed pace of work and an emphasis on producing highly finished workpieces.

Dockyard management, including supervisors, fell into two categories: 'neutrals' and 'partisans'. Neutrals lacked commitment to any particular section or work group since they viewed their position as transitory due to promotion prospects or transfer elsewhere. Partisans, on the other hand, developed an affinity with their immediate workgroup, section or division and took a craft-based pride in a superior quality of work, craft knowledge and application. One turner illustrated how the distinction worked in the Mechanical Factory.

> A good thing about the dockyard is that instead of sacking people they got moved around until they found a job they were more suited to. That worked fairly well as a system. But the real problem was at the gaffer level. Above the T[echnical] S[upervisor] level was an Inspector for each function in the Factory - Fitting, Turning, Planning, D[imensional] I[nspection] and Quality. Above them was a Foreman for the whole [Factory]. Inspectors used to deal with disciplinary problems when they arose but there was no continuity because they were always moving on after a year or two, either sideways to another department or upwards through promotion. Luckily, our TS wasn't interested in a career or promotion but was happy to take pride from being involved with the Light Lathes. Because of this he created a sense of pride [in the section] among the men.
> (Dockyard turner)

Another turner, who had come in from a medium-sized engineering shop in Edinburgh, also commented on the role of the same supervisor and the ways in which he won the consent of the section, or at least of those he saw as the most competent and able turners:

> [The] line supervisor [TS] was a powerful influence on the section. Some TS's didn't bother too much and wanted a quiet life [but the TS] in the Light Lathes was a strong personality who would get you transferred if your face didn't fit because he took a pride in *his* section and would defend its reputation from outsiders.
> (Dockyard turner)

Some 'neutrals' attempted to win further advancement by supervising subordinates closely with a view to raise their work rate. For sections like maintenance, who covered a wide geographical area, this proved to be counter-productive.

> You cannot watch all your men all the time. It's an impossibility, especially in the maintenance sections in the dockyard ... There are chargemen over the years that I've been under that's said 'I'm going to sort this lot out'. But they've found out very quickly that without the cooperation of the workforce that there'll not [be] a lot of work getting done. I can think of one chargeman in particular. He thought that he was God's gift to chargeman, probably. His men ... were doing nothing unless he was there. Everytime he left the job they sat down or whatever. They wouldn't work unless he was there.
> (Maintenance boilermaker)

Further up the hierarchy a more aloof sense of distance from the shopfloor was perceived, even when it had been temporarily transcended outside the workplace.

> Higher up the ladder you could go on a golf outing with some of them and have a drink together on the day. But on Monday morning they would still ignore you and walk right past you on the shopfloor.
> (Dockyard turner)

Such fine gradations did not extend to every manager. Some were grateful for the advancement made possible by a seemingly open and meritocratic promotion system. Middle ranking positions seemed to be more numerous than in other comparable workplaces. One senior manager recalled that advancement was rather arbitrary and depended upon an informal 'sponsorship' system.

> The dockyard has been good to me and I've enjoyed being in it. ... The dockyard was always good to me. It was never, ever bad to me. ... You always found opportunities, I didn't have to

go seeking them terribly much. They were always there for me to exploit them if I wanted to exploit them. The thing was a living entity itself, people leave and people are replaced. I just seemed to move from job to job when the timing came right. I ken when I wanted to move and I made myself known. And people were always very good above us, I've got to say that, looking back. When you go back, you find that you always had a mentor, a more senior individual, just a wee bit ahead of you or a wee bit older than you, that would say, 'there's the right way to go and now's the time'. A lot of people in the dockyard, if they were in the right area at the right time, could move on in the dockyard. No bother at all. You could develop until you reached a niche you liked.
(Industrial relations manager)

However, as well as being a possible source for consent, the personal sponsorship system underlying advancement opportunities could also lead to conflict.

In 1971 I was contemplating going into management. Well, not management, we always called it 'management', but staff, non-industrial. I nearly went in to become a draughtsman, which is what I wanted to do. But I got absolutely conned by my manager and I felt very, very annoyed that a manager could do that to you. I went to the union and I thought they were absolutely appalling in they way that they treated [the issue] and I decided to take my revenge by becoming a shop steward. It may not be for the right reasons but that in fact is what actually happened.
(Union convener)

However, trade union activity itself was not perceived to be an obstacle to promotion. Indeed, it might be an advantage involving some of the same personal and political skills.

For incoming workers, a Rosyth newly re-tooled for nuclear refits presented a stark contrast to the more primitive conditions and technology often found in both large and small engineering shops in Scotland. One young worker, whose father-in-law had worked in the dockyard since 1939, joined the dockyard in 1971 from an 'antiquated' small heating engineering workshop in Leith which he had left in disgust over being 'swindled out of £2 a week by the gaffer'. Entering the dockyard came as something as a shock after working in a small, family-run workshop.

I got a big shock when I started. The dockyard was a big place. About 300 [people] worked in the factory alone. The Lathes were a big section and they used new tools with special tips and things like thread wire gauges [for measuring screw threads] which I had never seen in my life before. Somebody even came to check your job for accuracy. And they had these big drawings which I wasn't used to. Even micrometers [engineering precision measuring instruments], were fairly new to me. I had been a bit of an expert with hand calipers [basic measuring device] but nobody used them much at Rosyth. A lot of the machinery in the Light Lathes section was brand, spanking new because they were getting geared up for the first refit of the

Dreadnought. So I didn't like it much to start with and thought that I'd probably chuck it in a few weeks.
(Dockyard turner)

Even turners with wide experience of the engineering industry were struck by the situation at Rosyth. One turner who joined Rosyth in the mid-1970s had 'never seen so much gear for machining' despite having worked with Babcock in Renfrew throughout the 1960s, worked in the US in the early 1970s before returning to Scotland at Weirs in Yoker, Glasgow. Partisan supervision also came as a surprise to him, although he was less impressed by dockyard insularity,

You were spoiled for choice when it came to tooling and gear. Any tools you wanted were ordered up and the tool store was always well stocked. The gaffer had all the respect of the men in the section - the only gaffer I ever knew who got any respect from the men. But he wouldn't take any advice about anything. You were expected to obey instructions. The idea of the dockyard is you start learning when you come in. They don't like to think that anybody from outside knows anything about the job.
(Dockyard turner)

This emphasis on the excessive working up of jobs extended to a relatively relaxed approach to rework. Inferior work readily found its way to the scrap bucket (or sometimes to the bottom of the river) and the lack of stock accountability meant a steady supply of material was always on hand for reworking such jobs.

If the TS didn't like a job or if you knew that you had scrapped it, you could simply go away and get another bit of material and start all over again. There was little quality control and material bar was plentiful. Each turner kept a stash of off-cuts of different materials such as Nickel Al[uminium] Bronze, Phosphor Bronze, Stainless Steel, Mild Steel and so on, and a good range of diameters for just such an emergency. One time somebody scrapped a small shaft and it so happened that a new set of stairs were being built in the bay. So, at dinner time the shaft was pressed into the wet concrete and covered over. It was never discovered and when those steps get demolished we will be waiting to see if it makes a re-appearance for the first time in twenty years.
(Dockyard turner)

Within sections time was spent creatively devising rituals implicating the workgroup in various forms of 'time wasting'. Numerous examples of this were cited, from fairly innocuous games to surreptitious drinking sessions. With a target to employ a certain proportion of the workforce as general labourers for social reasons, such individuals would often be at the centre of clowning around.

> At this time the dockyard also had a policy of employing people who were a bit on the mental side [sic]. The labourer for the Light Lathes was ... the butt of a few pranks. One was to fill the scrap metal bucket with lumps of [heavy] material and put some lighter cuttings on the top and we'd watch him struggle to get it lifted onto his barrow. Another stunt was for a couple of us to go up to the scrap bin and rummage around and pretend to pull out a pound note. On seeing this [the labourer] would rush over to the bin and empty out all the scrap onto the floor to see if anything was lying at the bottom. This went on quite a few times but he never twigged we were at it.
> (Dockyard turner)

Although it was admitted that this may have been 'a bit cruel ... nothing nasty ever happened' and the pranksters felt that they were involving someone who, in other circumstances would be socially marginalised, in the life of the section. Some workers in the factory brought in old clothes and boots, 'otherwise he would have walked about in rags', and gave him food. The donations of clothing could also have unforeseen consequences for the mythology of the section. Stories such as this would be repeated over and over: 'Once he was even given a bus inspector's uniform. He caused absolute chaos at the dockyard bus station when he started directing drivers into the wrong platforms'.

Such experiences were not confined to turners. A boilermaker who came to Rosyth in 1976 from shipbuilders Scott Lithgow in Greenock was also attracted by the prospects of job security despite low dockyard wages. The context of this was the rise of South Korea in world shipbuilding making the position at Scott Lithgow precarious:

> At that time [early 1970s] tradesmen used to go about to different places to get working experience elsewhere. So this Rosyth job came up, actually looking for unemployed folk. So I actually stopped working at [Scott Lithgow] and I went for this interview. I was taken on right away. So I came through [to Rosyth] in 1976 ... I thought that if I wanted a job for life then this was the place although the wages were below what I could get elsewhere. The pension scheme and the 'job for life' syndrome that everybody used to quote ... [meant that] I was willing to sacrifice larger amounts of money now for security in the future.
> (Maintenance boilermaker)

For local workers Rosyth had the same attraction,

> I always used to think that the dockyard was really poorly paid. I remember some of my pals earning ten or fifteen pounds a week when I was on three pounds and thrupence. I used wonder what I was doing here when I should be somewhere else getting decent pay. But my parents

said, 'No, stick it out and you'll be alright' ... Of course, you got sick pay, pensions, gratuities, all in the back of your mind was some sense of security.
(Dockyard shipwright)

Rosyth also became a final settling point for many, older ex-miners as the surrounding Fife coalfields ran down in the 1970s and 1980s.

After the pits shut there was a hell of a lot of ex-miners came [into the dockyard]. I can talk about that with some justification. When we were giving some evidence to the House of Commons Defence Select Committee on dockyard sickness [levels]. A hell of a lot of the sickness was coal-related diseases. It was a lot of middle aged guys in the non-craft unions with bronchitis, silicosis and all the rest, strangely enough going on sick leave at the dockyard. When the pits were on their way down they were coming in there.
(Union convener)

Local male school leavers were socialised into the dockyard system through the apprenticeship system. Little thought was given to non-dockyard or non-mining careers. Entering the dockyard was simply part of a seemingly natural drift of local male adolescents into working life.

We were always going to be working at Rosyth. The dockyard was the main place. In 1977 I sat the dockyard exam. When I left school that was all I tried for. I never tried for anything else at all. I signed on for two months, having already been given the results, I was in, accepted for a dockyard apprenticeship.
(Shipwright shop steward)

The dockyard was one of the few alternatives to coal mining locally for young male workers and Rosyth recruited out of Fife mining villages like Oakley, Comrie, Lumphinans, Valleyfield, Kelty, Lochgelly and Cowdenbeath.

Basically, my family history is mining. I come from Kelty, I live in Kelty. My brothers were still there when the pit shut. I went for an apprenticeship. At the time it was the Gas Board, the Electricity Board, the dockyard and a few others if you didn't go to the pit.
(Union convener)

Others emphasised Civil Service job security that Rosyth represented.

Coming from Kelty, the dockyard was the second choice. My first choice was into the NCB Workshops. My dad was in the pits, my grandad was in the pits. I was going into the pits as well, as a lot of the lads from Kelty did. Most of my pals from the school went into the pit. I went initially into the pits as well. But my dad was always saying to me, 'Look eventually this is going to be finished, I don't know when or what time, but you should really start thinking about

other things'. I put my name into the dockyard after six months. I accepted the fact that the Civil Service meant a job for life [compared to the] Coal Board pits running down. Where am I going go? My answer was to go somewhere secure. In my psyche I wanted a job for life and the Civil Service, dockyard, represented that for us.
(Industrial relations manager)

Once the hurdle of the dockyard exam was successfully negotiated, the precise trade that would be followed was a bit of a lottery and the broad-based training did not always seem particularly relevant to actual dockyard practices.

It was so easy then. I chose shipwright because I was told that that was the main one in the dockyard at the time, [laughs], I could have chosen. I don't think I could have electrical but I could have had anything else. Why I picked shipwright I don't know. I don't know who I was listening to at the time. It's a jack of all trades. It started off quite interesting in the Training Centre where I got the basics of woodwork and metalwork, and then Glass Reinforced Plastic came along and you got the basics of that as well. But then the stuff that you used in your apprenticeship you never seen it again when you went into the big, wide world.
(Shipwright)

However, it would be wrong to suggest that dockyard apprentices passively inherited deferential attitudes. Newly acquired trade identities, shared by large groups of young men coming under stricter work disciplines during training than adult workers, also socialised apprentices in sectional pride,

We were a wee bit of a rebellious group [of apprentices]. In fact we were told that we were the worst intake ever. ... A couple of the instructors came from the Navy and they were real disciplinarians. [One instructor] in particular was a real stickler for discipline and we had loads of problems with him. We were all sent round the front to see the Head Instructor. He couldn't handle us and we couldn't handle him. That was another case where we called the union in as well because he had us out the back filling up skips with rubbish instead of doing our trades.
(Shipwright shop steward)

Dockyard labour process

Dockyards typically divide into shop workers and afloat workers. Repair and refit work carried out on board ships was done by gangs of craft workers from the same trade and, therefore, the same union. Working in close co-operation, afloat gangs were able to form closely-knit, sectional identities and carved out large measures of workgroup autonomy and control over the labour process. Such self-sufficiency bred a deeply sectionalist consciousness among afloat workers,

aware that their own industrial strength was usually enough to preserve the advantageous terms of the effort bargain against managerial encroachments.

For workers engaged on nuclear refits the position was even clearer. Working in the nuclear complex created a sense of separateness; a physical separateness represented by the erection of a fence marking-off the nuclear area from the rest of the yard and an ideological sense of separateness derived from the strategic nature of the work done 'behind the fence'. A tacit understanding of the vulnerability of nuclear refits to industrial disruption ensured that nuclear workers received the best working conditions and monetary benefits. One indication of the ways in which the nuclear area was protected was that a number of more militant shop stewards failed to get security clearance for access to work 'behind the fence'. Despite this,

> one of the groups who were deemed to be more militant were the people who worked in the nuclear complex because they felt important. If you set elite groups up who are there for a special reason, as the management did with the nuclear, they can also turn on you ... On acoustic tiling we wanted [fifty pence] an hour otherwise we won't do it because it was dangerous. Well, it wouldn't matter if it was [fifty pence] an hour or a pound there was still the same danger.
> (Shipwright shop steward)

Although the division of labour in the Factory was more clearly defined than for afloat there continued to be considerable discretion for detailed control over certain jobs and certain machines. One such machine was the giant shaft lathe which was only used for refurbishing propeller shafts. Management simply allowed the turners to organise and plan the programme of shaft work themselves.

> The [shaft] stock programme was ran by the men. The boys kept a history for the Nickel Al[uminium] Bronze programme for minehunters. This should have been under management's control but 'the phantom' foreman simply by-passed the gaffer and came directly to the men to find out about the progress of the shafts. It has to be said that this seemed to suit the gaffer as well as us.
> (Dockyard turner)

New recruits, even from medium-sized engineering firms, found that the scale of the dockyard and individual sections permitted a certain degree of anonymity.

> The size of the Light Lathes section, with 42 machines and about 40 turners [meant that] if one guy went missing it was not noticeable.
> (Dockyard turner)

Although craft prerogatives were as jealously guarded in the shops as afloat the division of labour under factory conditions was more detailed, with workers operating individual machines under closer supervision and stricter job definitions. In general, labour organisation in the shops was less robust and more passive than afloat sections. Sectionalism in the Mechanical Factory, for example, produced a union organisation largely under the hegemonic sway of the Factory management.

> ... [T]he trade unions abdicated authority to the management in the Factory. They refused to give any leadership. Even on the Shop Steward's Committee rather than agree a common policy with the afloat stewards they would rather protect the autonomy of the Factory. In this case the autonomy of the Factory really meant the autonomy of the Factory management.
> (Engineering shop steward)

An exception to this seemed to be the coppersmiths. Coppersmiths, a trade largely specific to the dockyard, had few avenues of promotion, had a lower than average age profile and acquired a strong sense of group identity from being a numerically small trade working within a single workshop. Their reputation for militancy grew in the 1970s, particularly after a young shop steward from a Fife mining and Communist Party family background became first, a senior steward and later, convener. Under his combative leadership the coppersmiths wrested concessions from management until the union was consulted on virtually every decision affecting the Pipe Shop.

> Certainly the coppersmiths were easy to, I'll not say manipulate, they were easy to manage. If I went to speak to a meeting of coppersmiths there were 150 people there and that was it. I didn't have to go to speak to different sections, different ships or anything like that. The average age of the coppersmiths was probably mid-20s. And at that particular time everybody was leaving. Everybody and their dog were leaving to go to Mossmorran, and Braefoot Bay and Burntisland. So people coming out of their time, traditionally in their early 20s, that's where the coppersmiths had a wee bit of strength - where we had young boys prepared to have a go and they were all under the one roof.
> (Coppersmith convener)

Nor was this confined to Rosyth. A similar reputation attached itself to coppersmiths in other dockyards.

> At Chatham the most prone group to industrial disputes were the coppersmiths in the Pipe Shop. I also found that at Rosyth too ...
> (Chatham shipwright)

But coppersmith militancy was not simply an automatic function of age, factory work or skill. It was part of a process of an ongoing competition for craft survival. In the 1970s and early 1980s this was conducted around who should control the new, emerging labour processes being introduced by nuclear refitting. As a relatively small and obscure work group, coppersmiths had to struggle not only with management but also with more dominant craft unions. For a minor trade, facing both ways, militant leadership had to be seen to produce results.

> I was giving the leadership. Only it had to work. Nuclear welding was getting developed and we and the AEU went to war over the question of who would do the welding. The AEU, plumbers, boilermakers and coppersmiths all went to war in the late 60s, early 70s over what was a new phenomena then, nuclear welding. And the vast, vast majority of it went to the coppersmiths. We went to local demarcation and then national demarcation courts and came out very favourably, with about 90 per cent of it. Fitters were making the argument that it was largely mechanical joints that were being replaced and we were making the argument that it was largely joints that had been soldered in the first place. This went on for a couple of years. Because our union was only about 150 men, I suppose I struck a chord there.
> (Coppersmith convener)

Nuclear refitting introduced not only technical changes to Rosyth but also brought changes to work organisation in its wake. Shiftworking was introduced on a large scale to ensure a continuous round-the-clock work effort on the submarines. Shiftworking represented a minor change from the more passive routines of Whitleyism because it permitted increased shop steward activity around its introduction, operation and distribution.

> When the coppersmiths really took the bit between their teeth in the '70s and '80s, them and the shipwrights, that was the first real local bargaining in terms of shiftworking. When shiftworking burst onto the scene in 1969 with *Dreadnought* there was an opportunity for local bargaining. As long as it wasn't wages you could take the time and trouble and effort to try to negotiate. That was the first wee show of strength that started to come off, when people stood up for themselves. In the main that was the coppersmiths and shipwrights to start with, the boilermakers followed suit later on. Basically because they were under the one roof.
> (Coppersmith convener)

Shiftworking allowances represented a rare way to improve take home pay. It was also difficult to monitor night work.

> When I worked nightshift we had 'trade relaxations' between the shipwrights and the boilermakers, shipwrights and plumbers, shipwrights and laggers. It always suited me because there was always money there. You either worked nightshifts or overtime, lots of overtime. I remember doing about ten or twelve weeks of nightshift work and going in at half past seven to half past seven in the morning and working from half past seven to midnight and then having a shower and then having my tea and going into a proper bunk in a sleeping bag with my clock and going to sleep every night with half a dozen other guys. We were given a portion of work to do. For example, delagging. The gaffer would say 'right I want this bit down tonight' and he might get a blue marker and mark it down to there. He'd say, 'if you get that done boys that's splendid'. So you would go in, dig out, do your bit of work, work hard to get this bit done. But as soon as you were finished have your shower and meal and that would be it. He'd come in in the morning and say 'how did you get on, alright?' There was not a soul there to check on you. But you'd done your allocated portion of work and so were seen to have done exactly what you were required to do.
> (Dockyard shipwright)

Dockyards were viewed not just as different from 'outside' industry but also from other dockyards. This is clear from the way that each yard pursued different approaches to the detail division of labour within the overall dockyard structure. Changes were communicated between unions in different yards as a matter of courtesy to let each other know of new developments. As one ex-Chatham shop steward who moved to Rosyth recalled,

> I can remember letters coming from Rosyth and Devonport to our convener saying, 'We've organised this, negotiated this, and this is this now. We are just letting you know'. So they had changed something, perhaps taken on somebody else's work, maybe there was a dispute procedure [being followed]. The boilermakers would say 'That's our work' and the shipwrights would say, 'Well it used to be but the material has changed. It was aluminum but now we are making them in timber, so surely its ours'. And the procedure would go down to Bath, there would be a discussion, a board, a hearing, and then somebody would make a decision and that work would be deemed the [property of] shipwrights or boilermakers. And that information would be fed to the other dockyards. So there was that feeling of that maybe we were slightly different from each other but we were all really part of the same thing. There was a link-up *and* a wanting to stand on your own two feet.
> (Chatham shop steward)

Dockyard workers were therefore divided by yard, trade, grade, union, section, and immediate workgroup. Yet union organisation seemed on the surface to be based on the underlying strength of controls over work and Whitleyism.

Whitleyism and union organisation

The Whitley system of representation set a seal on dockyard unionism. The consolidation of Whitleyism at Rosyth in the 1950s institutionalised a dockyard consciousness. On the one hand, Whitleyism took care of industrial issues; on the other hand lobby politics dealt with political matters. Even the convener of the coppersmiths eschewed 'politics' and stressed direct workplace organisation. Sensitive about threats of 'subversion', dockyard workers were 'positively vetted' by the Admiralty. In a Communist Party stronghold like West Fife the Admiralty could well expect to be employing left-wing militants. As part of the Civil Service Cold War purge of active left-wingers among the workforce, in March 1950, a welder, John Copeland, was suspended from Rosyth by the Admiralty.[1] Copeland, Secretary of the Lochore branch of the Communist Party and the Communist candidate at the Fife County Council elections in 1949, pleaded 'guilty to the fact that I am a Communist' and claimed that 'security' was being used to remove working class militants from the dockyards (*Glasgow Herald*, 18 March 1950). An Admiralty statement said,

> The First Lord has decided that Copeland is employed in connection with work the nature of which is vital to the security of the State ... Mr Copeland has admitted that he is an active member of the Communist Party and it is therefore necessary to remove him from his present duties. (*Glasgow Herald*, 12 April 1950)

More usually, the divorce between 'politics' and 'economics' went unchallenged in Rosyth. An exception to this was a layer of left-wing TGWU shop stewards who were active in the Labour Party.[2] On occasion this wider sense of socialist politics within the TGWU transcended the Whitley/lobby politics dichotomy and translated into workplace-based action. A ringing example of this was the blacking of tailshafts for the Chilean submarine *O'Brien* in 1974 in protest against the Pinochet regime in Chile. After docking at Scott's yard in Greenock the *O'Brien* sent tailshafts to Rosyth to be repaired, protected and shipped back to Chile as spares. On arrival at Rosyth local

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[1] Political suspensions were not confined to Rosyth. A similar case arose at Devonport dockyard when a dilutee electrical fitter with nine years service in the dockyard and ten years in the Navy was suspended in October. (*Glasgow Herald*, 31 October 1950).

TGWU stewards in PSTO(N), the stores organisation, refused to release them and demanded from the MOD 'that no future Chilean Navy work will be done in Rosyth Dockyard until the fascist Junta is removed and a freely democratically elected government put in power and human rights restored in Chile' (TGWU letter, 15 December 1978). After years of blacking, the MOD eventually relented. The Materiel Manager wrote to the TGWU, 'Your action has resulted in specific assurances that no materiel supplies will be made from Rosyth to the Chileans in the foreseeable future or work undertaken at Rosyth on their behalf', (PSTO(N) letter, 16 October 1978) and repeated an earlier request for the TGWU to lift the blacking: 'I wonder if, in the light of the above, you are now able to seek your membership's agreement to lift the blacking imposed so long ago on these MOD (N) shafts in order that they may now be transported to Portsmouth'. (PSTO(N) letter, 29 August 1978). Eventually, in December 1978, the TGWU agreed to lift the blacking.[3] Although internationalism at Rosyth could be traced as far back as 1919 when a group of Portsmouth engineers based at Rosyth agitated over the 'Hands Off Russia' campaign (Holford, 1988: 7), such examples of strong class-based internationalism were exceedingly rare.

By the 1960s, then, traditional dockyard employment relations were taking root as a strange sense of 'normality', based on the seemingly permanent character of the Cold War, settled upon Rosyth. A benign internal dockyard state (Burawoy, 1979) was created, with the seniority functions of the internal employment structures and the routines of collective bargaining and grievance procedures bolstered by the corporate-welfare functions of the dockyard. For example, a Whitley housing committee allocated 3,500 houses to dockyard workers on the basis of documentary evidence of marriage, profoundly shaping the structure of the local residential community. Whether from small, medium or large engineering firms, new recruits were impressed by the plethora of formal and informal benefits, allowances and privileges.

> The discipline and benefits system [meant that] the most important thing was to turn up on time. Less emphasis was put on what you did when you were there. Conditions were generous:

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[2] One of these, senior TGWU shop steward and dockyard lagger, Alec Falconer, became the left-wing Labour MEP for Fife and Mid-Scotland in 1984.

[3] The TGWU letter of 13 December 1978 stated: 'The TGWU in Rosyth have accepted a request from MOD(N) to release these shafts, providing that they are destined for a British vessel and it has been confirmed that they are to be fitted to *HMS Opossum* due to undergo refit at Portsmouth Dockyard. Additional safeguards have been achieved in that the shafts are to be transported to Portsmouth by a PSTO(N) vehicle driven by a TGWU member and the Trade Unions in Portsmouth have been notified accordingly'.

four weeks paid leave and two weeks unpaid, leave could be taken in one hour units, [and] 14 days paid sick leave, which was often treated as part of the annual leave entitlement. Turners booked their own individual times on jobs with the recorder and the bookings were rarely checked by anyone - unless it was a 'flapper' [i.e. urgent] of a job. Some dockyard turners even had the cheek to go on the sick with 'stress'. Another way of getting more money in your wages was to work shifts. The premiums for shiftworking gave you an extra 3 hours pay a day for night shift and 1 and a half for backshift and you got half of that rate on the daywork week which followed the shiftwork week. So for a 40 hour backshift week you would get 47 and a half hours pay and 43 and three quarters the following week.
(Dockyard turner)

It took time for recruits to find out how to work the intricacies of the system to individual advantage.

The benefits system was great but I was scared to do anything because I was more used to the risk of the sack at any time. At Leith we even worked Christmas day because it was not a standard holiday then. [The dockyard system] was totally new to me but at first I didn't know how to take advantage of it.
(Dockyard turner)

New starts soon learned what the dockyard system of establishment and allowances meant, materially and symbolically.

The older, more established turners used to stick together and hogged whatever went on in the section, landing the best jobs, overtime, shifts. So I learned fast and started to make up some of the money. Under Civil Service rules there was a distinction between established and non-established men. They could never get rid of a man once he was established. Once you got that, the next thing for turners was to get 'Grade A Allowance'. This was paid to turners working within tolerances of half a thou[sandth of an inch]. Most turners worked to this tolerance at some time so the [local] full-time union negotiator came in to make sure it got paid out. He managed to get seven Grade Ones [i.e. A] paid. These went to the six most senior turners in the section and we found out that the seventh was going to him, even though he was on full-time union duties and never once touched a machine.
(Dockyard turner)

The elaborate system of benefits was matched by an equally elaborate system of representation. As a 'model employer' union membership, consultation and representation was formally encouraged. The highly structured Whitley system connected numerous committees and sub-committees from national to local level. Enforcement of bargaining rights depended on an intimate knowledge of the procedures outlined in the voluminous MOD Manuals and various local and national agreements.

All key negotiations on pay and conditions took place nationally at the Shipbuilding Trades Joint Council (STJC). Locally, the shop stewards fed on the scraps of Whitleyism, bargaining over the details of centrally determined policies. A constant competition with management was pursued, so that the ante was ratcheted up when national decisions arrived back in the yard. A suffocating localism pervaded dockyard unionism making national dockyard-wide practices difficult to implement. The less influence shop stewards felt over national policies the more forceful they would be in defending immediate conditions and applying a local colouration to standard agreements.

> The unions took a very parochial view of everything. They were only really interested in what was happening inside the dockyard gates. When workers from our union [AUEW] from Chatham were being offered the alternative of a transfer to Rosyth when their dockyard was being closed, all the AUEW [at Rosyth] wanted to argue about was for two local men to be hired for every worker that came up from Chatham.
> (Engineering shop steward)

At each stage of the Whitley system a distinctive spin was applied, reflecting the relative power of rival factions on the national bargaining group, the Shipbuilding Trades Joint Council, STJC, the individual dockyard concerned, the particular union, trade or grade, right down to the workgroups affected. Where Whitleyism attempted to flatten employment relations by imposing uniformity distorting ripples appeared on its even surface. Standardised policies were in a certain tension with the peculiarities of individual union organisations, often led by the same convener and bureaucratically efficient secretary for years on end. Each individual shop steward committee fiercely defended its own organisational integrity, preserving its autonomy and specific trade identity, according to time honoured rule books and traditions. All power seemed to emanate from the conveners of individual shop steward committees.

> One of the problems ... was that everything was negotiated at national level and applied across all the dockyards. The union's job in the yards were of a small nature in respect of welfare, wage complaints and general small grievances. Apart from conveners, there were two types of set-ups: there was the Joint Efficiency Team reps who looked at work standards, work measurement, and there was the DES reps, who did sometimes do what their functions said they should. But the vast majority of the time they were the convener's right hand man who looked after the general well being, its welfare, 'pain and paint', stuff like that.
> (Union convener)

Individual union conveners often survived in place for more than a decade and acquired authority from this longevity and knowledge of Byzantine Whitley procedures:

> The convener tended to be placed on a pedestal. I can't talk too much about other unions I can only talk about my own. But the convener was protected by his other reps and he had enough full-time reps to be able to do that. He tended to only take the most serious cases, dismissal cases and stuff like that, and he was left alone basically, to have a good life, I think [laughs], and coming out every year at mass meetings. He was seen as something away from everybody.
> (Shipwright shop steward)

> The Whitley system ran the dockyard and the Whitley Chairman was a very powerful guy. The leaders of all the unions all seemed to be fairly elderly guys who had been there forever. What they said was the law ...
> (Shipwright shop steward)

By the 1970s, a new layer of younger shop stewards at Rosyth became increasingly dissatisfied with the complacency of the older conveners, the sluggishness of the Whitley system and the displacement of effective bargaining to a distant centre.

> If I want to be honest with you, it was a disaster. When I went on the Whitley Council in 1970 there would be 17 of them, 15 of them would be over 50 [years old], probably 12 of them would be over 60. It was all sort of cushy numbers, jobs for the boys ... It wasn't nepotism, [but] it was something similar, the old pals act. These were full-time positions. I'll not say that that was any different from any other company but it was a disaster. Then again it didn't need to be anything else. For £4-odd a week you didn't need anything else because there was nothing to argue about, there was nothing to fall out about. The vast majority of stuff was done nationally because of the Whitley structure. After we had exhausted the Yard Whitley level then that just shot right up to national level. It was not unusual for cases to take three and four years. I can remember on a couple of occasions being in London [for a hearing] and people had already died [before their case was heard]. You didn't need livewires or any hotshots in those days. All you needed was somebody that was clever enough to write it down for you, stick in to the system and hope for the best.
> (Union convener)

This, establishment and the relaxed pace of work, had the effect of drawing the heat from potential confrontational situations.

> So although there was maybe a furore in the dockyard once it got to [Whitley] level it didn't blow up and [people walked] outside the dockyard. And obviously there were established men who didn't want to take action, who had been there for years, and were quite happy working in this easy-going regime.
> (Union convener)

Whitleyism also encouraged a shared set of institutionally-based practices and attitudes between management and the union leaderships. Individuals cultivated personal relationships and recognised a shared dockyard background, behind which a commitment to overall organisational goals was simply assumed. As one long serving shop steward noted,

> I found that the people in the yard were fully committed to the yard, actually. Even on the management side, they had maybe come in as a draughtsman, and they'd been promoted and had gone to Bath. So you met people on the Whitleys that actually knew the dockyard system, how the dockyards worked. Now, whether they were making the right decisions, that's another thing. You could talk to them on a level that they knew what you were talking about, which was very beneficial.
> (Non-industrial office representative)

Considering the minutiae on which the system turned, Whitleyism supported a bloated workplace bureaucracy. With the introduction of any new bonus scheme the unions fought, usually with success, to have increasing numbers of senior stewards 'made up' to full-time status. By the 1980s there were over thirty industrial shop stewards working full-time time on union duties and around 300 lay shop stewards representing about 4,000 workers. In 1985 a typical shop stewards' committee covering some 800 workers would elect six full-time representatives from among its 67 accredited shop stewards (AUEW List of Shop Steward Posts, 1985).[4] At that time there were ten such shop steward committees for the industrial workforce at Rosyth, ranging from those representing mass memberships like the 1500-strong Transport and General Workers Union (TGWU) to the couple of dozen represented by the Furniture, Timber and Allied Trades Union (FTAT). However, large numbers of full-time shop stewards did not translate into a united dockyard union organisation, cut across as it was by inter-union and personal rivalries. With time to spare, shop stewards on full-time facilities often engaged in strengthening their own individual positions at the expense of the overall interests of the union membership. For some, this was the secret weakness underlying formally strong dockyard union organisation.

> There were thirty-odd full-time reps, a huge amount of full-time reps in the dockyard, situated not in one place, but all over the dockyard. Even the conveners weren't together. Its not as bad as it was then but basically it was, 'I'm the convener of my union and you'll do as you're told.

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[4] Typically these full-time posts consisted of a Health and Safety representative, a Joint Efficiency Team representative to oversee time management and productive bonus factor analysis, and four representatives to monitor and negotiate on specific areas of the Dockyard Efficiency Scheme.

I'm GMB and that's it. UCATT have no say in what I do'. And there was a number of problems. Some of the shift patterns that were introduced caused all sorts of problems. One union in particular decided that they wanted a certain shift pattern that suited them and didn't suit anyone else in the dockyard. And away they went and done it! So although we had strong individual trade unions it wasn't really conducive to a strong trade union set-up.
(Union convener)

In the relaxed work conditions within the dockyards, individuals became shop stewards for a variety of reasons. Often it was the outcome of a personal grievance or incident.

I could see things that weren't quite right and I would say something about it. It was a natural progression that I would get more and more involved with the union. At first, it was the 'blue-eyed boys'. The big thing in the dockyard was that certain people got looked after, got the cushy numbers, got the majority of the overtime. They got well treated and the rest were fighting over the scraps. That was the main thing at the beginning ... They were well established. They were in with the bricks. I suppose they knew the ins and outs, the dodges, as well as anybody. Only they could hide better. And they were well in with particular gaffers.
(Shipwright shop steward)

This made it difficult for younger stewards who came into the section to establish credibility in the eyes of older workers.

I became a shop steward two years after coming out of my time ... The first couple of years [as a shop steward] I was treated as a bit of a joke because they knew my background from the Apprentice Training Centre. I always had this rebellious bit. They thought I was a militant so some of them treated me as a joke and viewed me with suspicion. But I think over the years they knew what I was about and I was acting in their interests. I got more and more respect as time went on.
(Shipwright shop steward)

In Fife, however, with strong Communist traditions in the mining communities, an orientation towards trade union activity was often already present, even before workers came through the dockyard gates.

My father was Chairman of the Fife Communist Party for 15, 16 years. My grandfather was active in the Fife Communist Party. Both were National Union of Mineworkers representatives. My old fella', he was the checkline man, collecting the union money round the doors and all that. So historically my family has always been steeped in it as far as I could remember. I suppose it was just a natural progression from there.
(Union convener)

Such a background predisposed such individuals to rise rapidly through the union structure at Rosyth.

> I went to the dockyard in 1966 to serve my time as a coppersmith. Prior to 1970 I became the Apprentice's Representative on the Whitley Council, first for the coppersmiths and then for the full Training Centre as a whole. That's how you progress on. I became a shop steward in 1971. I was actually sitting on most of the committees before my time was out. I was the first apprentice to sit on the Joint Monitoring Committee.
> (Union convener)

His subsequent career as a dockyard trade unionist in the 1970s and 1980s was charted with a certain inevitability.

> After I became a shop steward I went to Ruskin College in Oxford for a month. Then I became the branch secretary and I went from there to become senior steward for the coppersmiths, onto the Whitley Council, then Secretary of the Whitley Council for a while. Then privatisation came up I became chairman of the [union campaign committee]. I think I was chairman of about 500 committees at the time. Ultimately, I became the convener, the yard convener, if that's what you want to call it.
> (Union convener)

Not everyone saw shop stewards as selfless representatives of the common good. Others held the quality and motivations of shop stewards in low esteem, regarding them as inferior tradesmen, with the Whitley bureaucracy enabling a self-interested pursuit of their own advancement.

> I was a shop steward at one time but I wasn't very impressed with the unions.
>
> *Interviewer*: What was the problem?
>
> It was just that I felt that they were, shall we say, at the top echelons of the union, weren't that good as tradesmen ... A lot of them were lazy gets. You've heard the saying 'They couldn't have put a nut in a monkey's mouth'. Useless. They couldn't even use a spanner and now he's in an office, you know. I'm not saying they were all like that. There were two or three good ones. One in particular who was really good and Babcock ended up giving him severance, which I think was the best piece of business that they ever done. The respect was lost, in my case anyway, I stopped being a shop steward because I felt people were just trying to better themselves by using the union, that was the reason that they were there. Especially when the Safety Reps came in, that was all shop stewards. It was turning them round about. And then they end up getting made up to PTOs [supervisors]. That was boys that wouldn't have got to a PTO position going any other road bar shop steward and then beyond. They used the union. In fact they used the people in the dockyard to advance their wee bit of money and their careers.
> (Boilermaker)

Differences in dockyard trade unionism from the rest of industry was emphasised repeatedly, by both those who had experience of 'outside' industry and those with wide experience of the trade union movement but whose workplace unionism was confined to dockyards.

> But then again the dockyard wasn't really a reflection of the rest of the trade union movement. It was a microcosm, if you like. It was a world within itself. It was totally different from commercial industry.
> (Shipwright shop steward)

An AUEW shop steward, who led a major occupation of an engineering factory in Glasgow against closure in the early 1970s, found the dockyard bonus scheme indicative of the rigid, centralised industrial relations system.

> There was a different attitude from outside industry. We got virtually no information from the Shop Stewards Committee about what was going on. This attitude probably stemmed from the fact that there was no room for bargaining [locally] on wages. The bonus was split 60 percent [of the saving on time] to the worker and 40 to management. You could only really make any bonus on nuclear work. Everything else was 10p on each hour regardless of how long a job took. There was little a shop steward could do except to try to keep money in the boy's pockets.
> (Engineering shop steward)

If the bureaucratic structures of dockyard unionism made it a haven for self-interested individuals - and not all were - it did not go unchallenged. By the early 1980s, just as the Levene reforms came on the agenda, Shop Steward Committees saw internal struggles conducted around oppositional and accommodative attitudes to management.

> There was no one younger than me [on the shop stewards committee]. The rest were about ten years older. Our particular committee was very well run, I felt ... At that time they were maybe not anti-management but definitely not pro-management either. There was big, big numbers on the committee ... maybe touching 30 [shop stewards] covering 350 to 400 members.
>
> *Interviewer*: Would you say that the union had a cosy relationship to the management?
>
> Not as far as I could see. Far from it. They were really head to head. Then again I wasn't party to any the higher talks at that time, I had just come in. Maybe they were a bit cosier than I was led to believe but it certainly seemed listening to the reports that were coming out that there was a wee bit fight there... There was two main camps in the committee. One was sort of softer and one was harder and the rest were in between. So whoever was coming off strongest out of these two camps the rest would follow. I think the one that was a wee bit more left, if you like,

were starting to score a lot of points and were getting more and more listened to. Things dramatically came upon them with privatisation and it was all up in the air.
(Shipwright shop steward)

Rise of dockyard militancy in the 1970s

Even though it permitted a certain belligerence from union conveners towards dockyard management, Whitleyism was highly effective in channelling local discontent into the formal regulatory machinery. Only in 1962 did the first post-war strike at Rosyth take place when over 1,000 workers at Rosyth struck against the government 'pay pause' for public sector workers (*Dunfermline Press*, 10 February 1962). However, strikes did not become a regular feature of labour relations at Rosyth for another decade. By the late 1960s discontent was building up in the dockyards over low pay and the bonus system and, as in the years before 1914 (Haas, 1985), the dockyards were affected by the wider industrial militancy in Britain. The lowest paid dockyard workers were first to engage in serious industrial action.

I joined the dockyard in July 19th 1969. I don't think it was anything to do with my background but I was on strike, I think on August 15th 1969 with the Lagging Shed. At that time laggers were paid Band 4 rates, the maximum wage. Whereas persons employed alongside us coming from the private contractor were on treble time working onboard Polaris submarines and they were also on double time on other crafts, other ships. Laggers were just plain single time and a very low wage. The lagging shed at that time had 18 workers and the lads were determined to go on strike, the first strike that occurred at Rosyth dockyard for any sustained length of time; it took five and a half weeks.
(Dockyard lagger)

Then in 1972 two serious disputes occurred In May nine TGWU members of a Port Auxiliary Service (PAS) crew, refused to work two tugs to clear a path for the Polaris submarine *HMS Repulse*, which was being undocked after refit. The nine were soon joined by the other PAS crews. An overtime ban had been imposed by the PAS crews since January because a claim for an allowance for handling nuclear work was being dealt with too slowly. Against threats that the SSBN *HMS Renown* would not be refitted at Rosyth if the dispute continued management offered a cash settlement and a revised shiftworking agreement. After the PAS crew returned to work on 3 July the dockyard newspaper stressed the need for conciliation on all sides: 'The return to duty of the PAS and the offer made by management may be the basis of a goodwill for which there is always room in this sort of situation' (*Spotlight*, July 1972).

Yet the dockyard axioms of goodwill, compromise and reasonableness were to be put immediately to an even sterner test with the rejection of the annual pay award as 'insulting' (*Dunfermline Press*, 7 July 1972). Labour-management relations quickly deteriorated at Rosyth and pressure grew to escalate the dispute: mechanical fitters and constructive trades organised an overtime ban; one day token strikes were held in all dockyards in June; management efforts to lay off 250 workers at Rosyth in July because of the PAS dispute were successfully resisted by the unions; the government again threatened not to risk putting *Renown* into Rosyth; management docked 1.25 hours pay from the wages of 2,000 workers who attended a mass meeting, the unions withdrew from the Whitley Committees in response and management withdrew permission for further shop steward meetings (*Dunfermline Press*, 21 July; 28 July; 11 August; 18 August 1972). As the Trade Union Advisory Committee expressed the mood: 'We are fighting the government here. They are using us as whipping boys. They want to put the boot into us. But the attitude of the workers is hardening' (*Dunfermline Press*, 7 July 1972). Yet the Trade Union Advisory Committee was more equivocal and resumed their Whitley positions a few days later. As a spokesman put it 'We are sensible and reasonable people ... we might be doing our members a disservice by suspending negotiations' (*Dunfermline Press*, 18 August 1972) Demonstrations were organised outside the Civil Service Department headquarters and MPs at the House of Commons, which was, according to the union secretary of the Whitley committee, 'the first instance in which Government industrial employees confronted their employers in this manner and for this purpose' (*Spotlight*, August 1972). Until late August a combination of lobby politics and token action prevailed at Rosyth with the result that the offer was increased from £1.50 to a still unsatisfactory £1.75.

Then a qualitative shift in the dispute occurred. According to the District Official of the TGWU, Jimmy McIntyre, nationally the unions recommended that 'the members continue to exert moral pressure on management by limited stoppages, working to rule etc.,' but locally he conceded that 'some of the members decided that was not strong enough' (*Dunfermline Press*, 25 August 1972). Typically the action was unco-ordinated, as individual shop steward committees recommended their members take strike action. One striker recalled the general chaos that resulted from the lack of union leadership:

> We went to a meeting to get a report back from the Whitley committee and also the Shipbuilding Trades Joint Council about what was happening at national level with

negotiations. There was a general unhappiness with the Heath government. The miners had just been on strike and won a sum, although it had been a bitter strike and a lot of people had been affected through that strike and in the communities. We said at the meeting, 'we're unhappy' and Jim McCusker, the Yard Whitley secretary, stood up on the platform and said, 'You can take it or leave it and that's the end of the meeting', which disturbed a number of us. On reflection we would maybe have been better to co-ordinate our activities a bit better. But quickly there was a [TGWU] shop stewards meeting and we agreed that the TGWU should push for all out strike action within our own membership. However, what we neglected to do was to inform the other parts of the T&G, for example, PSTO(N) and the Captain of the Port's [department], who had just been on strike at the same time as the miners, drivers, Caledonia, who came under outside branches and would obviously be affected if we went on strike. We had the meeting in the Boot and Shoe Shop. The T&G shop stewards from the General Managers Department vastly outnumbered the rest of the stewards called a mass meeting right away. The mass meeting was held in the dockyard ... and voted overwhelmingly to accept the T&G recommendation to go out on strike. But again we never left time for people from the bottom end of the yard and other areas to come up get to the gate. And when we went to the gate that day we found out that the AUEW had decided to strike, the Boilermakers had decided to take strike action and it overflowed into a general strike at Rosyth dockyard ... The coordinating [meeting] ended up in a shambles because of Jimmy's [TGWU District Official] wrong attitude, the paternalistic attitude that Jimmy had at the time. Jimmy done a lot of good work at Rosyth but he had a paternal attitude to the workforce. And that broke the solidarity of that collectivism.
(TGWU shop steward)

Despite this an unprecedented 4,000 industrial workers at Rosyth walked out on unofficial strike on 22 August. Even a management statement admitted that 'Production work at Rosyth has virtually come to a standstill. Only about 1,350 crossed the picket lines this morning ... and this includes 600 apprentices' (*Spotlight*, August 1972). Large numbers of pickets, sometimes involving 1,000 workers, demonstrated outside the dockyard gates. A 'picket line', set up at a bridge near Inverkeithing railway station, was observed by local railway workers who refused to take any passenger or goods trains into the dockyard.

Despite persistent appeals little was done to overcome the strikes' principal weakness: the limited action at the southern dockyards. Although it was made official in early September the Rosyth unions' call for all-out strike action from the southern yards continued to meet with little response. Two Rosyth shop stewards toured the southern yards in an attempt to spread the action and reported that while the response at Chatham was 'poor', things were improving at Portsmouth and Devonport (*Dunfermline Press*, 29 September 1972). Devonport had already taken sporadic action in support of the wage claim and finally struck on 25 September - one month after the strike at Rosyth began (Burns, 1984: 120). One of the shop stewards remembered the reception they found at Devonport:

> When we went to Devonport we were extremely pleased. We were in Devonport and showed our pass, at that time it was a common pass, and they just let us in ... We managed to have a meeting inside the dockyard and the lads at the dockyard turned round and said, 'we cannot stand here at Devonport and have the lads at Rosyth out on strike therefore we're coming out'. So they all walked out. It was a marvelous sight. They then had a rally on this great big hill just outside the dockyard, a huge rally because Devonport had around 13,000 to 14,000 workers at that time. We were well received and they had a collection for us. We bundled all the money in a bag, we had big sacks of money to take back. And the Devonport lads stayed out on strike [after we left].
> (TGWU shop steward)

Action spread to other MOD establishments; 500 TGWU members struck at Faslane, 200 at Coulport, with establishments at Arrocher, Livingston, Lathalmond and several in England were also affected (*Dunfermline Press*, 1 September 1972; 22 September 1972). Regular meetings were held in Stirling with union representatives of 25 other government establishments in Scotland, including the Faslane and Coulport bases. While the unions claimed that 17,000 workers were on strike across the country in late September, both the southern yards and the Royal Ordnance Factories' gave only limited support.

Yet this came too late to affect the course of the dispute. Throughout the seven week strike fewer than 10 per cent of industrial government workers in Britain joined the action. Nationally, the union leadership in the Joint Co-ordinating Committee decided to refer the claim to arbitration, a decision immediately denounced as a 'sell-out' by the fifty Rosyth strikers in London for the meeting. At a meeting, held at Dunfermline Athletic's football ground to report the arbitration decision to the Rosyth workforce the TGWU National Secretary, John Cousins, was jeered and heckled over the 'sell out'. Cousins claimed that the failure of the southern workers made such a decision inevitable (*Dunfermline Press*, 29 September 1972). But even at Rosyth things began to fray at the edges. Isolated and frustrated the strike at Rosyth seemed doomed to certain defeat. One indication of this was the boilermaker's narrow vote to return to work two weeks before the strike ended. A call for a return to work at Rosyth in the first week of October was backed at a mass meeting amid bitter recriminations against the MOD, the trade union leaderships, strikebreakers and, of course, against the passivity of the southern yards. Back dated strike pay was used to engineer the return to work. According to a member of the 1972 strike committee:

> At that time the Heath government stopped the Social Security, you had to prove hardship before you could get any Social Security and they deduct your strike pay, automatically. So I

> can remember us going up, and it was a hardship allowance we got it wasn't strike pay, and Jimmy [MacIntyre] had bribed the workers to go back to work: 'Vote the right way and you can get this money; don't vote the right way and you cannae get it. The law will stop you'. We went out [with the slogan], what was it, 'One pound seventy-five, Ted Heath take a dive'. We eventually went back, I think, for £1.90, which was about fifteen pence.
> (TGWU shop steward)

On the day of the march back to work placards were carried saying 'Southern Yards Let Us Down' and workers refused to start work until 'scabs' were moved to different sections (*Dunfermline Press*, 13 October 1972). As the normally moderate union secretary of the Industrial Whitley Committee, Jim McCusker, (in *Dunfermline Press*, 13 October 1972) put it:

> We have been promised all sorts of support from our Trade Union representatives, at national level from our Executive Committees, from the Trade Union side of the General Co-ordinating Committee. These promises have never been fulfilled. We condemn and deplore their attitude. We condemn them for their lack of leadership. They should be condemned for failing miserably

Against a government determined not to risk another defeat by public sector workers as that inflicted by the miners strike in February 1972 and trade union officials who seemed unsure of how to conduct the strike nationally, local initiatives proved incapable of generalising the dispute much beyond Rosyth, even to the other dockyards let alone to the hundreds of thousands of industrial workers in other Government establishments. As a trade unionist at Chatham who later moved to Rosyth recalled,

> 1972 was a big dispute here but I only found out about it when I came here. People would say, 'you bastards in Chatham, you never supported us in '72'. I can vaguely recall it being discussed but it was certainly never publicised, 'lets go out and support them', or anything like that.
> (Chatham shipwright shop steward)

Shop stewards at Rosyth suspected that the government had served 'D' Notices on media coverage of the dispute to suppress information about a strike in one of the most sensitive industrial sites in the country (*Dunfermline Press*, 13 October 1972). Although the Arbitration Committee awarded an across-the-board rise of £2.60 per week, with percentage increases for women and apprentices, the abiding memory of the 1972 strike among Rosyth workers was one of defeat and betrayal. It would take another five years before the unions began to recover and when the next test came in the 1980s some of the strengths and weaknesses of 1972 would reappear.

The test of commercial management

During the late 1970s and early 1980s, as the unions recovered from the 1972 defeat, industrial action again became a familiar feature of labour relations at Rosyth.[5] This account, from the management point of view, of the £50 million refit of the Polaris submarine *Renown* in Rosyth between July 1978 and February 1980 shows some of the many sources of labour unrest and their consequences:

> The refit got off to a bad start when an industrial dispute over quality control documentation escalated to such an extent that all work stopped, other than that essential for nuclear safety. Work resumed after three weeks' delay and for the next two months progress was up to schedule though already there was cause for concern about the coppersmith effort... The portents for the New Year were not encouraging as industrial problems in the pipework area resulted in a considerable backlog in the welding of pipework... It seemed likely that the refit was already running four weeks late when a non-industrial pay dispute brought all work to a stop for about six weeks. Industrial morale, already badly hit, was further worsened by problems over their pay award. All this led to a re-scheduling allowing eight weeks delay. (Brown, 1983: 21-22).

Naturally, the trade unions were expected to lead the opposition to commercial management. *The Economist* (16 March 1985) assessed the prospects thus:

> The plan sounds more radical than it is ... The navy will not object ... [T]he main problem will be with the trade unions ... One of the attractions of the scheme is that dockyard labour problems can be dropped in the laps of the commercial operators who run the yards.

From the outset the prospective bidders for the tender were acutely aware of this. The Managing Director of Babcock International said that, 'The biggest task will be to convince the trade unions that we are responsible management organisations' (in *The Engineer*, 7 November 1985). Kennedy (1986: 28, 31) argued that by advocating commercial management the government entered a procedural 'minefield' in getting the enabling legislation onto the statute book. Union expertise in lobby politics would mean that this process would be '...easily exploited by unions with sixteen years' experience of running rings round overdue reforms'. Far from being a bulwark against change the unions' initial response to Levene was 'constructively' measured in the forlorn hope of

opening up a dialogue. The Rosyth trade unions commissioned a study which argued for a trading fund arrangement to counter 'the current vogue where decisions are based on narrow ideological grounds' (Rosyth, 1984: vii). In the preface (Rosyth, 1984: vii) Rosyth union leaders appealed for full participation in the decision making process:

> This document is not a policy statement. Any reader will note that several of the suggestions in the document are anathema to some within the trade union movement but we let them stand to demonstrate our willingness to participate in a full debate and to show that we are ready to negotiate on measures to improve our efficiency.

Such efforts at consultation were studiously ignored by the government. Trade union requests for information through the conventional Whitley system and direct appeals to the Secretary of State fell on deaf ears. Whitleyism as a system of cooperative industrial relations in the dockyards was clearly finished. Levene's proposals were excluded from the normal channels of consultation on the pretext that his status as a 'personal adviser' put his advice beyond established procedures (HC 453, 1985, Q200). The duration, method and biased content of the consultation process were criticised both by the trade unions and the Defence Select Committee. The Defence Committee concluded that the MOD's handling of the consultation process was 'inept and insensitive' and that there was a 'strong reason to suspect that "consultation period" is in any case a misnomer, and that the Government had already decided for its preferred option' (HC 342, 1985: xii-xiii).

The banning of trade unions at GCHQ in early 1984 indicated the level of hostility of the Thatcher government to public sector unions.[6] This disintegration of participative forms of Whitleyism into the seemingly harsh and unyielding environment of 'new realism' returned lobby politics to the centre of the STJC strategy. In this it largely succeeded. The success of lobby politics was reflected in two highly critical Parliamentary Committee reports. When the government decided to press ahead anyway the unions drew even closer to the Labour Party as the agency for resisting commercial management. Union success at this phase came from the substantial delay to the Dockyard Services Bill which took 25 sittings to eventually clear and so jeopardised the government's implementation timetable. For TGWU Secretary of the STJC, Jack Dromey (1986: 101), this was a 'major blow' to the government. An amendment to the Bill by Lord Denning

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[5] See for example *Dunfermline Press*, 4 August 1978; 6 July 1979; 18 December 1980; 5, 12 June 1981; 7 August 1981.

allowed the unions a provision to obtain a declaration from the High Court if they were dissatisfied with the government's consultation process. Commitments were also given by the opposition parties to return the dockyards to the public sector after the impending General Election.[7] Delaying the introduction of commercial management until the election when, hopefully, a Labour government would set up a trading fund became the main plank of the union strategy. Unfortunately, on Friday 3 April 1987, the last working day before Vesting Day, Judge Millet at the High Court dismissed the unions' argument about inadequate consultation. Commercial management was introduced into the dockyards on the following Monday.

Throughout the campaign the Labour Party and the trade unions persisted with the core themes of Tory ideological dogma versus rational managerialism, the elevation of private profit above national security and the indecent disregard of the Tories for Parliamentary institutions and the 'due process'. A broad alliance was formed, ranging from Lord Denning to the likes of Ken Gill the Communist trade union leader and unilateral disarmer. This was mainly achieved by employing the rhetoric of defending the national interest and endorsing the procedural role of Britain's national institutions, House of Commons, House of Lords and the High Court. All the established symbols and myths of British maritime history and national archaism were freely drawn on. One leaflet produced nationally in 1985 and distributed in the yards declared in large type under a depiction of a warship flotilla:

Five reasons commercial management will not work...

ENGLISH CHANNEL	1588
TRAFALGAR	1805
JUTLAND	1916
ATLANTIC	1942
FALKLANDS	1982

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6 A token one-day national strike in defence of trade union rights at GCHQ called by the TUC was well supported at Rosyth. *Dunfermline Press*, 3 February 1984.

7 Even though the Bill had already been given Royal Assent on 25 July 1986, an opinion poll carried out for the TUC in October 1986, seemed to support growing union optimism about stalling commercial management, when it found that 71 percent preferred public ownership of the dockyards and ROFs with only 15 percent favouring privatisation. TUC, *NOP Market Research Poll*, 1986, Q4b.

The unions frequently emphasised that the yards were *Royal* Dockyards and that the workforce were *loyal*. Dromey (1986: 101) even stressed that in the Queen's Speech announcing the Dockyard Services Bill that she had called the yards 'My Dockyards'. It was from such imagery that Lord Denning's support was drawn. For him it was a constitutional issue over whether the Crown could compulsorily transfer the workforce of the dockyards to a new employer without their consent. He related anecdotal evidence from Devonport, 'I have been there and I know that from generation to generation for the last two hundred years they have been in the service of the Crown, and proud they are of it' (*House of Commons Debates*, 9 June 1986, col 39). Even the Royal Prerogative could not deny the rights of 'free born Englishmen' to be consulted about which employer they should choose to 'serve', with Denning citing Lord Aitken from a 1940 case, 'That right of choice constitutes the main difference between a servant and a serf'.

In the dockyards industrial action was expected to play a purely supporting role to the main lobby politics strategy at national level. Yet industrial action at Rosyth threatened repeatedly to escape nationally circumscribed limits. Strikes, demonstrations, delegations, 'guerrilla actions', 'blackings', overtime bans and general non-co-operation and hostility to management maintained the momentum of the campaign in the workplace between 1984 and 1987. Local management, under pressure to improve efficiency before Vesting Day, adopted a more austere form of labour relations. For instance, they refused to officially recognise the Rosyth unions' anti-privatisation committee because it fell outside of the Whitley machinery. And in 1986, in an unprecedented move, 86 ex-apprentices were refused employment as craft workers. Union fears that the ex-apprentices were being used as 'pawns' by management in order to force through flexibilities between craft and non-craft grades resulted in a deep distrust and hostility (*FACT*, No 18).[8] Any work associated with private refits was blacked by the industrial unions. In June 1985 mass walkouts took place in support of stores workers refusing to handle equipment for the private refit of *HMS Euryalus*. In October the entire craft section of the AUEW membership were suspended after refusing to perform remedial work on the propellers of the privately refitted *HMS Redpole*. Yet even at the height of the blackings attempts were made to shore up Whitleyism. In one case the TGWU convener issued a call to union members for a return to orderly workplace relations after

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[8] Rosyth industrial unions bulletin.

unofficial meetings were held by shop steward to discuss blacking work on *HMS Whitehead* (*This Week*, 21 June 1985).[9]

Locally organised demonstrations, harassment of and walkouts against private companies became part of the national strategy to 'scare off' interested companies in late 1985. The government had become increasingly concerned that 'while companies were interested in the government's proposals, few were pressing for the contract' (Harte, 1988: 319). At Rosyth five companies had dropped out by February 1986 leaving seven companies or consortia showing a continued interest.[10] Demonstrations within Rosyth and pickets of contractors displayed the depths of workforce opposition to private contractors. Interested contractors were prevented from physically touring the yard because of the threat of disruption. When representatives of Babcock International and Thorn EMI attempted to tour Rosyth workshops on 2 April 1986 it was cancelled after a noisy demonstration of around 2,500 workers surrounded the visitors (*Dunfermline Press*, 4 April 1986). Demonstrations were also organised against government Ministers and Departmental officials when they visited Rosyth or the locality. When David Harte, the senior civil servant preparing the introduction of commercial management, visited Rosyth industrial workers staged 'guerrilla action', stopping work for an hour at pre-arranged staggered times, to ensure that the yard was 'in a state of total disarray' and production was 'disrupted for the day' (*FACT*, 29 October 1986).

A series of walkouts and one-day token strikes to coincide with key government announcements were solidly supported by the industrial workforce. The first strikes were called in August 1984 to protest against what was to be the first 500 redundancies in the yards, the general decline of the yards and the predicted job losses of 25 to 30 percent that would follow the implementation of commercial management. As part of the national strategy they were designed as set pieces primarily for propaganda purposes; they were not designed to hit production:

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[9] Rosyth management bulletin

[10] The announcement of lucrative Trident refits to be undertaken at Rosyth in December 1984 ensured serious interest was more easily retained. *Dunfermline Press*, 7 December 1984. However the biggest problem for the government was at Devonport where three of the leading companies who had passed the MOD's pre-qualification assessment, Northern Engineering Industries, a Trafalgar House led consortium and Vickers, withdrew after the massive scale of redundancies, an estimated 5,000 on top of the 2,000 before Vesting Day, became clear.

> In taking industrial action at this stage, we are not seeking to put at risk the functions of the Yard. Our objective is to bring home to the government our intention to bitterly resist their proposals and to show to [the] public and Parliament what is happening (STJC circular, 15 August 1984).

Traditional dockyard forms of union campaigning were resurrected. A study into alternatives to Levene was commissioned by the Rosyth unions; the Queen Mother was petitioned; all the main party conferences and MPs at Parliament were lobbied; a music festival was organised; a series of public meetings and a conference with Fife Regional Council were held; regular collections took place outside local football grounds; and leaflets were distributed in the local communities.

Yet the inoffensive cultivation of public opinion came unstuck when Norman Lamont, the recently appointed Minister for Procurement, visited Rosyth in early December 1986. His visit came only days after he had steered the Dockyard Services Bill through Parliament enabling privatisation to go ahead. A demonstration of 1,000 industrials blocked all the exits to the Central Office Block, trapping Lamont inside the building for thirty minutes. Eventually, the police forced a passage through the demonstrators to effect his release (*The Scotsman*, 7 December 1986). During the melee which followed windows were broken, the Managing Director's official car was damaged and policemen and demonstrators were injured. Eleven workers were later suspended by the MOD with seven eventually dismissed after being convicted of charges of affray in court.[11] Nationally, the union leadership were embarrassed by the publicity over the Lamont disturbances and worried about the impact on sympathetic MPs and Lords. Although neither the local nor national union leadership had been present at the Lamont demonstration they ensured that no further local initiatives were taken after it.

And yet the MOD and Babcock were unsettled by the militancy of dockyard workers during the campaign. It was later revealed that the MOD had secretly planned a £1,000 pay off for breaking down workforce opposition to changes in working practices, a total sum of around £10 million was set aside (Bathurst, 1988). However, by March 1987 the MOD became confident that such

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[11] A weekly levy was collected from the workforce to pay the wages of members suspended because of the Lamont disturbances. Later, in May 1987, the Civil Service Appeals Board found that the dismissals were unjustified and the new commercial managers offered the workers their jobs back as part of a general amnesty for previous conduct, helping to 'set the scene for a smooth transition period' according to the Chairman of the industrial unions at Rosyth. *Dunfermline Press*, 8, 15 May 1987; Interview with suspended worker, 24 November 1995.

measures would not be needed. This coincided with the period following the final walkout at Rosyth on 23 January 1987, Babcock Thorn officially signing the contract for Rosyth on 27 January, and the issuing of a writ by the unions after DML signed the contract for Devonport on 24 February. The extent of the MOD's anxiety is indicated by evidence given 'in private' by CFS nearly a *year* later. It concerns memoranda prepared by the Comptroller and Auditor General on the contingent liabilities agreed by the MOD with the commercial managers. A measure of the MOD's sensitivity is the repeated use of asterisks to blank out precise details:

> When the contractors went into the contract process *** both of them felt that *unless there was some guarantee *** they would not be prepared necessarily to take on the contracts and therefore we believe that it was right to give them this guarantee.* *** have settled down and it is greatly to the credit of both Devonport Management Limited and Babcock Thorn Limited that they have; they have handled their *** extremely well. We are still in an uncertain period *** . As a result of that it would be irresponsible to release the precise details of these contingent liabilities into the public domain. ***. It would disrupt what is turning out to be a favourable situation, albeit in difficult times. (HC55, 1988:Q 3002, my emphasis)

What is clearly being discussed as 'contingent liabilities' is the public funding of contractors to buy-off worker discontent, if necessary. That there was no need was due to the top-down constitutionalism of national lobby politics combined with the divisiveness and intrigue of bureaucratic workplace union organisation.

Despite all the workplace activity at Rosyth it was not enough to prevent a determined Conservative government, fresh from defeating the miners, from introducing commercial management. Nationally, the union campaign was hailed as a triumph. Locally, it had helped forge a militant response but it also revealed deep rooted divisions, between white and blue collar unions, between unions in Rosyth and Devonport, between shop stewards and conveners. Disunity within the ranks of the industrial unions surfaced as individual conveners attempted to rescue the old, unresponsive style of stewardship. From time to time this was transcended by more dynamic, more broadly based networks of shop stewards who kept up a demand to democratise the campaign by making mass shop steward meetings the decision making forum. That a dozen conveners prevented a couple of hundred elected shop stewards from realising this is testimony to the entrenched bureaucratic inheritance of Whitleyism. What this legacy meant for the new commercial management structures will be pursued in the next chapter.

Chapter 5

Rosyth under commercial management

On entering Rosyth dockyard on Monday 8 April 1987, Babcock Thorn, (BTL), were faced by an unusual set of circumstances. No private company had run a British naval dockyard before, let alone manage the refit of one of the most lethal weapons platforms on earth; there was no precedent for setting real prices involving the passing of real money out of navy hands for dockyard refits; nor was there any for a company who owned neither the fixed assets of the yard nor, at least formally, employed the workforce; and the managers had little control over the nature of the work to be done under its supervision. But initially the most worrying aspect of all for BTL was the attitude of the trade unions. BTL faced at Rosyth a deeply-embedded trade union organisation which had just waged a two and a half year anti-privatisation campaign and was more used to the long drawn-out procedures of the Civil Service than the so-called 'sophisticated' industrial relations of the privately-owned engineering sector.

This chapter sets out some of the key ways BTL attempted to change Rosyth from its Civil Service legacy. To Babcock the Civil Service legacy at Rosyth seemed incongruous for a large-scale industrial workplace. According one director,

> ... when we came here in 1987 we found an organisation really, which rather amazingly considering what it did, was somewhat backward in its industrial relations and somewhat backward in its engineering practices. It was not registered to any quality registration; it was not accountable to the Health and Safety Executive - it had Crown Immunity; and although they made a lot of play at that time that everything was run efficiently, the reality was that there were a lot of shortcomings in how the affairs were managed. On the other hand, there was an extremely good quality of management, enthusiastic ... and intellectually bright management, but they weren't used to operating within a more commercial framework and weren't really in an industrial framework.

Some of the more obvious deficiencies in industrial practices quickly became apparent to BTL. For instance, less than a handful of people were engaged professionally in the quality function:

> Shortly after we came in, a [diesel] submarine had been refitted ... and we had to virtually rework the submarine because ... there were no quality records available. Of course the

> Navy would not accept it back into service without quality records. So we had to go back and re-do a lot of the work that had previously been done but there was no evidence of.

Generating financial and other management information was another problem for BTL.

> ... we had quite a lot of heartache in the first few months extracting good management information to run the business and it took us quite a long time to establish that. How effectively was labour performing, management of materials and cash flow stocks, and project financial information - none of that was readily available in any effective way.

Despite such difficulties, Rosyth was viewed as a profit-making opportunity with little risk to the finances of the parent company:

> [I]t was a business opportunity, first and foremost. There was perceived to be an opportunity there to generate some profit ... for shareholders and, at that time, it was a seven year contract which did not require a lot of capital investment. So that was seen to be attractive.

BTL claimed to have the right background as a consortium to handle the transition to a more commercial approach at Rosyth. Babcock's experience in the private engineering field gave it a number of advantages for tackling engineering practices and industrial relations.[1] First, it had a long history of managing complex engineering projects. Second, it was a well-established firm in Scotland. Moreover, it had an intimate knowledge of trade unionism in a Scottish engineering environment. Rosyth, a director admitted,

> was seen as being *principally an industrial relations problem*. Babcock felt confident in their ability to manage that because of the experience they had at the Renfrew plant where

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[1] According to a senior Babcock source:

> Thorn EMI, on the other hand, were a large consumer and defence electronics and music and entertainment company. Thorn gave Babcock what it lacked: a pedigree in high-tech defence markets. Babcock was seen to be in the metal-bashing end, although sophisticated metal-bashing ... We weren't a major defence player. It was considered we needed somebody who was a major defence player, which Thorn were, and also had a major high tech electronics [background] and, with that blend, we were a powerful consortium.

As senior personnel within Thorn changed and the business was re-focused around music and entertainment, Thorn's minority, supportive role in the consortium became increasingly passive. Thorn decided to leave the defence sector in the early 1990s and sold their 35 per cent share to Babcock in 1992. In any case, from the early days Babcock were always the main driving force behind the consortium: 'The results were consolidated into Babcock, any funding requirements were on Babcock's balance sheet, and all the reporting by management here was through to Babcock corporate headquarters'. (Rosyth director).

there had been major industrial relations changes and initiatives over a number of years which obviously led to the management developing skills and experience necessary. (my emphasis).

The Babcock side of BTL became the main part of the Facilities Management Division of Babcock International. At Rosyth the Babcock management team enjoyed a high degree of autonomy from the parent company. By the early 1990s Babcock International had became increasingly dependent on BTL for revenue. As table 5.1 suggests Rosyth's contribution to the profitability of Babcock International was regularly around a fifth, while turnover accounted for about a quarter.

> At the end of the day [corporate HQ] turn to us and say 'Well, what do you want to do as local management'? If you have a pay dispute or we want to do something about pay strategy, or we want to re-organise the business in some way we need to keep them informed. But they will say: 'What is it you want to do? You are managing the place' ... If you need to find money or if there is investment required we need to seek their approval. But we agree a budget each year for our operating results and we have got a high level of freedom to operate within that.
> (Babcock manager)

Babcock's roots in Scotland can be traced through to the 1870s. The Renfrew plant of Babcock & Wilcox, an American boilermaking firm, opened in 1895. After 1900 the firm developed into a large, diversified engineering multinational (Babcock, 1991). Until the mid-1960s its main products were the original water tube boilers for power stations, marine and industrial usages. Its connection to the defence industry was traditionally based on boilers for Royal Navy ships. Since the 1940s Babcock carried out fabrication work for nuclear power stations and in the 1980s has done work for the Trident programme (Babcock, 1991:34, 37). By 1985 Babcock International was a diverse engineering and contracting multinational with a worldwide turnover of more than £1,000 million and employment levels of 26,500 (Annual Report, 1985).

Babcock's background of restructuring production and labour relations in Scotland in the 1970s and early 1980s seemed to make it well-suited to undertake the changes envisaged for Rosyth. Declining, less frequent orders for domestic power station boilers, changing technology, increased market entry costs, higher quality demanded by CEGB, nuclear boiler exports limited by national politics, lack of a turnkey capability and a sluggish financial

position, combined to make Babcock's market position precarious in the mid-1960s. This was reflected in the internal structure of the Manufacturing Division to which Renfrew belonged. First, a physically inflexible labour process limited Babcock's ability to switch production to respond rapidly to changing product markets. Second, an irregular pattern of fewer but larger orders placed by the prime customer, CEGB, made it difficult to operate fixed capital economically. Typical of a 'capital widening' approach, Babcock accumulated plant during high ordering periods before the early 1960s, simply adding new stock to the existing plant, within buildings 80 years old and equipment up to 50 years old. With the 1960s shift in market and product conditions the extent of obsolete surplus capacity became more obvious.

Table 5.1: Contribution of Facilities Management Division (FMD) to Babcock International turnover and profit (before taxation), 1990 to 1995 (£m)

	1990	1991	1992	1993	1994	1995
FMD Turnover	165.0	179.5	178.3	148.7	197.1	230.3
(as % of Babcock's overall turnover)	26%	23%	21%	19%	24%	30%
FMD Profit	10.3	10.6	10.4	5.4	11.1	10.9
(as % of Babcock's overall profit)	24%	22%	18%	25%	*	139%

Sources: Annual reports
*Note: FMD's contribution to overall profits in 1994 is massively exaggerated by a £54 million loss inflicted by Babcock's Energy Division

In response, Babcock adopted a two-fold strategy (Batty, 1980). At the corporate level, the plan was to diversify and grow through acquisition. For the Manufacturing Division the plan was for a controlled contraction of plant and labour. By 1978, the factories at Dalmuir, Dumbarton and Porterfield were closed and Renfrew slimmed down. Two redundancy programmes and progressive 'natural wastage' resulted in a 56 per cent loss of jobs in the Manufacturing Division by 1978 compared to 1967. At Renfrew 20 per cent of the workforce, 1,000 jobs, were made redundant in 1971 and 30 per cent of the remaining jobs, 1,200, went in 1977. Meanwhile, a joint campaign of management, unions and MPs lobbied government to preserve national boilermaking capacity through a consistent ordering policy. This 'created a sense of common purpose between the workforce and management which provided a solid basis for future consultation and participation on other issues' (Batty, 1980: 23). Chief among these 'other issues' was the redundancy programme. An 'extensive communication' exercise

with the unions in April 1977 was intended to 'ensure a responsible approach by the Unions to the redundancies required in a manner which did not damage the important long-term objective of securing the future of the plant' (quoted in Batty, 1980: 23).

The union's 'responsible approach' culminated in the 1985 *Productivity Agreement for Manual Employees* at Renfrew. This amounted to a fundamental revision of the formal basis upon which the effort bargain was struck. The frontier of control clearly favoured management, at least on paper, to allocate and define the detailed terms of the effort bargain independently of the trade unions. Moreover, workers were invited to identify with the company's goals as their own. The introduction to the agreement makes this explicit, 'It is recognised that individual prosperity is dependent on the success of the Company and, in order to maintain its commercial viability, there must be wide ranging changes in work practices and responsibilities, ...'. 'Key requirement' provisions set out the 'commitment of all employees to work in whatever way is required by this Agreement ...'. 'Key requirement's' 1 and 2 agreed that workers were now to be 'adaptable' and 'multi-skilled' so that teams could 'complete a task with the minimum number of people'. 'Multi-skilling' was to be implemented in two phases: immediately, with the 'Implementation of *within* union flexibilities and interchangeabilities *without reservation*' (my emphases) and between 1986 and 1987 across union flexibilities, including flexibilities between staff and manual employees, again *without reservation*. 'Key requirement' 3 reserved the right for management to change shift patterns and overtime to suit individual contracts. 'Key requirement' 4 inadvertently summed-up the changing balance between workplace control and consent where it stated that, 'Workers will co-operate fully in new work organisation structures', particularly with reference to worker self-inspection of workpieces. Non-negotiating Area Implementation Committees were to be set up within the factory to promote 'effective communication' in keeping unions and employees informed of the implementation of the Agreement. As part of a 'convergence' of conditions between staff and manual workers, new sick pay and pension arrangements and a move from weekly pay packets to monthly pay by credit transfer were introduced. Finally, the agreement stated that a revised trade union structure became 'necessary'.

The far-reaching 1985 Agreement was signed and implemented at the same time as the unions at Rosyth were resisting the introduction of commercial management. The Renfrew Agreement was circulated among shop stewards at Rosyth to indicate what could be expected under a Babcock management regime. Yet, for the first three years the unions and BTL enjoyed an

amicable, not to say amorous, relationship in an initial 'honeymoon' period. This was in the context of a conscious effort by the MOD to construct mechanisisms to simulate market conditions within the dockyard. How the 'market' was created is considered next before moving on to consider changes in industrial relations under BTL.

Inventing a market

Central to the restructuring of customer-producer linkages in the naval dockyards was the setting up of new market structures. For the MOD, the pressing priority posed by the new arrangements was to simulate rudimentary market-type instruments. Throughout the period when the concept of agency management was being formed precise details about how it would work remained ill-defined and under-developed (Harte, 1988). Insofar as these were worked out at all it was in response to the external pressure of the trade union campaign. Above all the new structures were to be as close as possible to ideal-civil market relationships including: the incentives and penalties of competition; profitability or failure; real money would be charged and paid for the value of work done; and a clearer separation established between the customer and the producer, with risk being passed increasingly to the latter. Sometimes called 'marketisation', this was to be neither the free-play of market forces, somehow spontaneously creating the necessary conditions for market entry or exit in line with neutral price signals, nor was it the complete organisational fusion of the past of an undifferentiated Navy and dockyard organisation.

The poorly worked-out nature of the new environment was readily apparent particularly during the early years of agency management and major anomalies persisted throughout the course of the nine year term contract. As a monopsonistic client the state could not adopt a disinterested stance towards dockyard organisation, capacity and capability because of its need to be assured of the future availability of capacity. It continued to own the dockyard estate, fixed assets and decided where and when the work should be allocated. The contractors were thus highly dependent on state agents' monopsonistic and ownership power for both setting its rate of profit and for the use of the means of production. Autonomy for the contractors was mainly confined to organising and managing the details of the productive process, with little scope for determining the shape of the final product. Lacking ultimate control through legal ownership rights, BTL were contractually committed to improving dockyard performance through the exercise of detailed and general control of the labour

process. Management operations, however, only remained viable to Babcock if they proved sufficiently profitable.

How the contractors restructured management and the productive process will be discussed below. First, the construction of market arrangements will be examined.

The new customer organisation

One of the principal aims of commercial management was to separate out the customer from the supplier. In the past much work was taken on informally and did not, therefore, fully enter the accounts.

> A lot of [work] would come from a skipper coming at the weekend with a list of defects. If he went to Small Ships he would know who the chargeman was, the supervisor, the inspector or whoever it was, and he'd phone them up to get his work done. That work could be hours of work [or] it could be weeks of work, quite substantial. That was rife throughout the yard. So if that was done the ships in refit [were affected]. We were here to serve the customer ... but a lot of that work used to get done an ad hoc basis ...
> (Planning manager)

A new customer organisation was created, the Directorate General of Ship Refitting (DGSR), to manage the Navy's ship refitting programme, the dockyard assets and to place refit contracts.[2] DGSR was intended to be a sleek, dynamic organisation. Unlike the Navy Department ensconced at its Bath headquarters, around half of DGSR staff were to be encamped within the dockyards, working closely with the refit managers.[3] In the new 'commercial' environment it was envisaged that decision-making would be speeded-up and that any tendency to 'empire-building' within the DGSR organisation would be curtailed.[4]

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[2] More fully, DGSR's 'primary objectives' were:
To provide specialist advice, policy and guidance in ship refitting matters and to inform the planning and resource allocation process.
To establish and achieve the ship refitting assets programmes to agreed time and costs whilst meeting specified standards.
To manage allocated resources efficiently and effectively in compliance with Departmental standards.
To develop, introduce and maintain appropriate organisation management and communication structures, procedures and systems. (HC 23, 1992:36)

[3] While the aim of locating around fifty per cent of DGSR staff at the waterfront was achieved in 1991, fewer than 20 posts were relocated from Bath itself.

[4] The technical complexity of managing refits on a commercial basis coupled with the sharp fluctuations in workload ensured that DGSR numbers in fact grew in the first four years: from 621 at Vesting Day to 701 by April 1991, before falling to 651 by April 1992, a figure still higher than the initial complement at Vesting Day (although it was estimated to reach 585 by March 1993) (HC 23,

One of DGSR's biggest problems was in setting initial refit specification. Instead of attempting to write the detail division of labour into the contract specification, outlining precisely how the work should be done, DGSR began to define the specification in 'output' terms leaving the detailed technical decisions to the contractors. CFS gave the example of a pump refit,

> ... we might have specified that its bearings had to be changed, what clearance it had to have, [and so on] ... Now what we might do is to look at the specification and say the pump is part of a total system and it is returning that system to a particular specification which is more important. That allows the commercial manager then to use his acumen and flair in managing the programme, to do things in the most efficient way and to do things perhaps better than would be done by us specifying how things should be done.
> (in HC 391, 1993:Q 85-6).

Since both DGSR and the commercial managers were at the stage of learning how to manage specification and pricing systems, where real costs were involved for the first time, negotiations were often protracted, resulting in time delays and rising costs. As the extent of work needed on a vessel only becomes clear once the refit is underway, it is difficult to anticipate beforehand the amount and type of 'growth work' required. Moreover, the customer retains ownership rights over the 'product' and remains present throughout the work process reducing Babcock's sovereignty further still:

> ... we are dealing with live products [sic]. It's not as if we are saying here is a design we will make you this and deliver it to you. It is their product ... at all times. They never give over to the company full ownership of that. During the refit they retain ownership. They don't let go of responsibility on the reactor systems for example. That's their responsibility ... [T]he fact they are there and constantly in our pocket and not standing back can be a considerable frustration.
> (Babcock director)

The customer therefore intervenes routinely and directly in defining what work is to be performed. The contractor is restricted to determining how work will be organised. A

1992:13, 36; HC 391, 1993:14, 40-1). Compared to an estimated decline in non-industrial staff at the dockyards of 27 per cent DGSR numbers fell by a mere five per cent between 1987 and 1993 over the same period. However, when the additional work taken on by DGSR is accounted for the staff reduction was estimated to be 14 per cent (HC 391, 1993: 40). Such comparisons between non-manuals and DGSR staff numbers mean very little since the demands of 'shadowing' the refit contract and dockyard assets and actually managing the refit work itself are radically different in nature. However, in the absence of other measurements for efficient staffing levels, as civil servants DGSR numbers needed some kind of benchmark, however arbitrary.

bargaining relationship develops between producer and client, closer to an integrated, emergent 'service' function than traditional pre-planning of shipbuilding, where the product remains the property of the builder until completion. Because of emergent work, early refit specifications were inadequate guides to the overall work package. For 'growth work' 'contract variation orders' were negotiated, by which DGSR pays for the additional work. BTL argued that the arrangements for agreeing prices for variation orders were too expensive, unwieldy and bureaucratic and did not differentiate sufficiently between major and minor variations to the work package.

Such problems with variation orders were compounded for the contractors by the introduction of risk pricing and 'incentive contracts'. Risk pricing involved a clear attempt to shift cost uncertainties from the customer onto the contractors through 'fixed prices' for labour, materials and services and sub-contracts and the setting of target costs and profits. The National Audit Office argued that fixing profits to a percentage or a money sum above actual costs within an overall maximum price limited the incentives for efficiency gains (HC 23, 1992:15). By 1992, DGSR were meeting their target of 90 per cent of total value of contracts by 'risk' or incentive pricing for labour and services but failed to reach the target for materials as table 5.2 shows. Material contracts often continued to be issued on a cost plus basis.

Table 5.2: Percentage levels of 'risk' and incentive pricing agreed with BTL

	Labour	Materials	Services
1989-90	99	84	61
1990-91	92	76	73
1991-92	93	68	95

Source: HC391, 1993: 14

Fixed capital and material supplies

Material supplies were a particular problem because the material content of a refit could not be known accurately in advance of 'strip and survey' work taking place. To a considerable degree materials were ordered at short notice. Because BTL decided to concentrate on industrial relations at Rosyth their contract bid deliberately left out the management of stores, which remained with the Navy stores organisation, PSTO(N), now DGST(N). However, some outsourcing was permitted, reducing slightly the dependency on PSTO(N). The term contract

also stipulated that contractors would receive certain ranges of materials on a free-issue basis from the MOD.[5] Even for those materials which the contractors were permitted to source for themselves there was often little scope for alternative sourcing.

> Most equipments are unique to Naval vessels and full procurement specifications are seldom released by the original manufacturers. The Navy supplies organisation are effectively the sole stockholder for many items, while for others the lead times involved are too long. (HC 23, 1992:16)

The Navy supplies organisation itself became subject to the shifting tides in the defence sector. It operated from a complex of sites dispersed across the country, often located close to the bases and dockyards which it supplied. In the first half of the 1990s this was being rationalised by Options for Change, Front Line First and the Defence Costs Studies exercises; between 1990 and 1995 the number of civil servant stores officer grades declined by some 40 per cent (IPMS Bulletin, January 1996: 5). As the naval stores organisation centralised and reliability deteriorated it had a knock-on affect on the dockyards.[6]

At Rosyth, BTL inherited stores which under naval control had accumulated stock over many years in an ad hoc way. Existing material stockholdings had poor documentation, storage, traceability, monitoring and accounting. BTL decided to dispose of these materials to ensure that the customer was charged fully for all material costs of future refits. In the process of the clear out everything from raw materials to fully assembled units were scrapped, amounting to an unknown magnitude of scrapped material. Waste on this scale amazed and shocked the workers involved in disposing of it.

With the MOD retaining ownership of the dockyards license fees, linked to base interest rates and inflation, were introduced for the use of buildings and plant. These were intended to

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5 When delivered late Ministry-supplied materials could cause substantial delays to refits. In 1990, for example, 15 per cent of Ministry materials were supplied late causing nine per cent of all refit delays (HC 23, 1992:16).

6 The main stores were based at Eaglescliffe in Teeside, Wrangton in Devon, Exeter, Devonport, Rosyth, Colerne near Bath, and Portsmouth. Problems created by the decision in 1994 to centralise all stores at the giant waterfront receiving depot at Portsmouth resulted in using the threatened depot at Colerne as an overspill facility. Although Portsmouth reportedly held naval stores to a value of £758 million and was receiving daily 18 lorry-loads of stock from the depots being run down it was simply unable to cope with the sheer quantity of stores. Even Colerne was soon engulfed by supplies and the Navy's stock location system became snagged up. The result was extra costs and delays in tracing, identifying and documenting what was often sophisticated electronic equipment lying around piled up and exposed to the elements (*IPMS Bulletin*, January 1996:5).

ensure that commercial managers did not receive an unfair subsidy compared to private repair yards and to encourage the most efficient use of dockyard land, buildings, plant and machinery. An annual profit of around £1.5 million to £2 million was made by the MOD from the fees (HC 23, 1992:18). However, such sums were largely fictitious since the contractors paid their fees to the MOD and later re-charged the costs of the fees back to the MOD by building it in to the hourly rates for naval refits. It was only for work won commercially that charges for the use of dockyard assets constituted a real cost to the commercial managers. While the proportion of naval work remained high, little incentive existed to use the assets efficiently, particularly where the commercial managers complained that the license fees constituted an unfair penalty when competing for non-naval commercial work. In 1991-92 revised license fees were introduced, more sensitive to fluctuating non-core work rates. According to a Babcock manager, flaws in the license fee arrangements were sorted out because, 'the Ministry themselves realised that they had shot themselves in the foot by charging a profit and if they could actually cut the license fee in half, the company got half the profit so they saved circular money'.[7]

Despite non-ownership, the commercial managers acquired responsibility for maintaining the fixed assets to a standard acceptable to the MOD. The MOD were responsible for capital investment but had expected the contractors to finance some new asset purchases, other than information technology. Yet investment by the contractors was limited indeed, confined mainly to commercial projects, such as the £1 million spent by BTL in 1991-92 to develop the Rail Division at Rosyth.[8] According to the commercial managers, the prospects of periodic retendering for the dockyard management contract inhibited them from sinking investments into fixed capital for core work, which they argued was the duty of the MOD:

> We are not doing massive long term investment. Up till now, we have had a term contract which started off at seven years and was extended to nine years and we don't own the assets and we don't have a continuing contingent obligation after nine years.

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[7] Thus at Rosyth license fees fell in 1991-92 by 40 per cent to £5.4 million compared to 1990-91, fell again in 1993 by some 22 per cent to £4.2 million, down to £3.7 million in 1994, and £2.9 million by 1995 (HC 391, 1993:15; BRD Annual Summary, 1994:14; Annual Summary, 1995: 14).

[8] The net book value of fixed assets owned by BTL remained fairly stable at £928,000 in 1993, £926,000 in 1994 and £892,000 in 1995 (BRD Annual Summary 1994:15; Annual Summary, 1995: 14).

Even when rationalisation plans were proposed for fixed capital, such as the 1990 £27 million 'spend to save' measures, the commercial managers found the procedure 'too cumbersome and prolonged' with the MOD taking two years to approve the rationalisation proposals (HC 23, 1992: 20). The physical layout bequeathed to the commercial managers was haphazard. Although facilities for nuclear refits improved some aspects of dockyard layout the problem identified by the General Manager in the early 1960s persisted into the 1980s,

> I think the shops tend to be too far away from the working area. One would prefer to see the main workshops closer to the main refitting area and the docks. There is a big space between the head of the dock and the main shops. I would prefer, from an economic point of view, to have the shops closer to the working area ... We have got to remember [that] the yard finished development in a very incomplete state and what the original plans were for it I really do not know ... (HC 263, 1961-2: Q989).

Nevertheless, license fee costs effected some rationalisation of the physical assets. This took two forms at Rosyth: first, the elimination of redundant space, and second, a more intensive use of productive space. On the first count, around 80 buildings were demolished, others were returned to the MOD and the physical infrastructure generally tidied-up. On the second front, Babcock inherited the legacy of blind accumulation in production areas,

> It was a very poor situation indeed we found here in this regard. A lack of professionalism in [the] management of assets ... [I]t was ridiculous, the bays and buildings ... you had totally cluttered production space and that was something Babcock brought their production engineering skills to bear in terms of improving the layout of all the buildings. (Babcock manager)

Although rationalisation made substantial surplus land and buildings available for alternative use or disposal, actual cost savings as reflected in lower refit costs proved difficult to quantify accurately.

Efficiency and productivity

No agreed measurement for the efficient use of space and physical capital exists. Neither does one exist for the use of labour. A National Audit Office study (HC23, 1992) concluded that efficiency claims suffered from a lack of adequate performance indicators.[9] Efficiency

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[9] In general, the NAO study notes that the Navy were pleased with the quality of vessels returned from the dockyards. Their main concern was the late completion of refits, which had a knock-on affect on operational planning. For the most part the dockyards were absolved from blame for late completion. On performance, competition and efficiency the results of commercial management seemed to suggest that some improvements had been made but were difficult to measure.

improvements were claimed by both dockyard contractors, with DML claiming total estimated savings of roughly £50 million between 1987 and 1991, while BTL claimed that total annual costs were reduced by £13 million and the unit cost of refits were reduced by 20 per cent (HC 23, 1992:21). These figures are based on *assumed* annual productivity improvements of eight per cent by DML and five per cent by BTL. Such assumptions, however, could not be validated in the absence of directly comparable measures of output.

One comparative measurement was direct hours worked by industrial employees. Here it was claimed that the 'labour utilisation rate' at Rosyth improved by 20 per cent by 1991, with a similar rate only reversed at Devonport during 1990-91 because redundancies could not be made at the same rate as the workload fell that year (ibid.: 22). However, these figures are inconclusive. Due to increasingly complex technological, supervisory, recording and monitoring infrastructure supporting refits, it was increasingly difficult to erode overhead costs. Table 5.3 indicates a rising number counted as 'direct' labour until 1991. By 1995, as table 5.4 shows, the direct/indirect labour balance was roughly equal. With workload reductions and falling employment levels overheads were being spread across a reduced base. This resulted in a reduced willingness by DML and BTL to carry overhead costs between ship refits. When the start of a major refit was delayed in 1990-91, for example, the MOD accounted for overheads separately and paid BTL £9.5 million, including profit.

Other measurements of efficiency were target completion dates, cost and quality. Target completion dates were set at the start of a refit and a final contract date negotiated once the full extent of the work became more clearly known. The final contract dates were realised in all but a small percentage of cases. Even where projects exceeded their original targets these were largely attributed to the growth in emergent work once the refits were under way. Thus in 1990-91 BTL were estimated to be liable for 19 per cent and DML for 28 per cent of time overruns with the remainder attributed to the customer or its agents. A similar case was made for cost. Because of the amount of emergent and extra work being approved by the customer or its agents during refits costs grew on most refits, sometimes by as much as another third. As an efficiency indicator quality is perhaps the most difficult to record 'objectively'. Once a ship was accepted by the Navy after trials, except for the most serious problems post-refit defects were repaired by ships' staff. Thus the quality control system could not guarantee that contract quality assurance specifications had been fully met.

Table 5.3: Direct hours per industrial employee

	1987-88	1988-89	1989-90	1990-91
Rosyth	870	956	963	1,047
Devonport	1,036	1,050	1,250	1,050

Source: HC 23, 1993:22

Table 5.4: Percentage of direct and indirect labour at Rosyth, 1991 and 1995

	1991		1995	
	Direct	Indirect	Direct	Indirect
Craft	82	18	79	21
Non-craft	51	49	36	64
Total industrials	68	32	67	33
Non-industrials	20	80	21	79
Total core	52	48	48	52
Periphery				
Industrials	90	10	94	6
Non-industrials	23	77	30	70

Source: BTL

Given the relatively indeterminate nature of refitting, time and cost disciplines contain an arbitrary element. In the absence of definitive measures there is simply no way of knowing if restructuring produces efficiency savings.

The effects of declining workload

Sharp changes in workload affected dockyard operations more than any other single factor, further frustrating claimed efficiencies. In not a single year between 1987 and 1992 did the

actual core workload at either yard match the planned work set out in the tender document.[10] Things worsened considerably in 1990. That year a range of factors combined to dramatically reduce numbers of vessels in refit: ships were on service for extended periods in the Gulf; refits were delayed because of pressure on public finances; nuclear submarine refits encountered significant technical problems; and the sudden retirement of major vessels while in refit. The refit programme was particularly disrupted by the cancellation of refits of the nuclear submarines, *HMS Warspite* and *HMS Churchill* in September 1990 and, subsequently, *HMS Revenge*. This followed on rapidly from the Options for Change announcement in July 1990, which proposed immediate economies to take advantage of the favourable strategic environment of the Cold War thaw, and technical problems with the reactor cooler system. Despite already spending £137 million on *Warspite* and *Churchill* refits since March 1988 and April 1989 respectively, the government valued immediate savings rather than incurring further refit, maintenance and operational costs over their 'natural' service lifespan. After 1990 the workload declined even more precipitously. In 1991 the core work at Rosyth was 30 per cent below plan and 43 per cent in 1992, with Devonport faring even worse, a 44 per cent reduction in 1991 and 64 per cent in 1992 (HC 391, 1993: 14). Major cancellations played havoc with the remaining refit programme, reducing the amount of non-core work available for competition and ships allocated on a non-competitive basis.[11]

Although the contractors had no legal entitlement to core work the Ministry accepted that it should bear the costs of retaining capacity and labour in the event of cancellations. When it came to a choice between the principle of competition and 'value for money' the latter clearly held sway. Competitive efficiencies were foregone because the MOD was committed to retaining certain types of excess dockyard labour. A straight choice existed for the MOD between paying the costs of redundancy caused by cancelled refits, which the MOD *were* obliged to cover, or of paying the contractors directly to retain surplus labour.

This problem of labour 'under-utilisation' further clouded efficiency claims. Uncertainties and disruptions to the refit programme were compensated for by the MOD. Under-utilised labour,

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[10] Over the four years to 1991, the volume of core work below planned levels was 22 per cent at Devonport and 17 per cent at Rosyth (HC 391, 1993: 14).

[11] For example, the refit of *HMS Gloucester* was originally allocated to Devonport, then it was going to be open to a tendering competition before, finally, it was redirected to Rosyth. Switching the

valued at £4.1 million in 1990, was included as an overhead cost for calculating local hourly rates (ibid.: 12). BTL were able to spread the cost across other work in the yard, even making a £250,000 profit from surplus labour. In 1990-91, however, so severe was the sudden disruption to the programme caused by the decommissioning of *HMS Churchill* and *Warspite* while both were in refit that the MOD paid BTL £18 million and DML £25 million, plus a three per cent disruption fee, to cover the cost of retaining surplus labour (ibid:12). Taken together, overheads, surplus labour, programme disruptions, changing employment levels, lack of performance indicators and strong assumptions for productivity gains made the relative efficiency of commercial management impossible to establish.

Competition and diversification

As commercial managers, BTL were expected to compete for the term contract periodically. In the original commercial management proposals this was to be a further spur to efficiency. However, first the contract was extended from five to seven years before commercial management was introduced and then, in 1994, it was extended non-competitively from seven to nine years. The contract was further extended in 1996 as negotiations over full privatisation dragged on, an option ruled out by Heseltine and Levene back in 1985.

Additional competition was to be introduced in two other ways: over that portion of naval work not already allocated to the yards and unrelated commercial work. However, unallocated naval work won by both yards was 'substantially less than the commercial managers' original estimates' (ibid.: 24). The NAO study argued that there were two main reasons for this: first that the size of the unallocated programme never exceeded one quarter of the total naval workload between 1987 and 1991 and, second, that where BTL (and DML) made bids for such work they were rarely successful.

Table 5.5 shows the poor response rate of both yards for unallocated contracts and the even poorer award rate. In part this was a result of spatial restrictions imposed by the MOD. BTL and DML argued that because priority had to be given to allocated work dry docks could not always be available for unallocated work. At Rosyth only three docks were available for refits. Two of the docks, however, were dedicated to submarine refits and the third, which could be split in two, normally housed a warship refit, with only the other half available at

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Gloucester refit to Rosyth allowed the MOD to absorb some of the surplus labour originally allocated

most times to accommodate other work. Thus the timing of when unallocated work became available largely determined whether it can be accommodated physically. BTL also argued that the basic nature of unallocated work discriminated against cost structures designed to support more complex ship refits.

Again the artificiality of 'market' competition was clear. Outside firms needed to be induced into competing for warship refits. Merchant shiprepair yards and shipbuilders which lacked sophisticated systems of refit planning were subject to high entry costs for naval refits. The further refit costs were driven down by the dockyards the lower the entry costs for outsiders were assumed to become. At some undefined point a 'crossover price', at which outsiders would be prepared to enter the market, would signal a competitive warship market situation. But knowing the planned future programme of allocated work gave the commercial managers a further advantage over rivals. As a director at Rosyth said, '... we can top [the allocated work] up by doing competitive tendering on other work. Obviously, some of the competitors in the ship refitting industry think this is unfair because we can do marginal costing and fill in the troughs'. Only one major warship refit was subject to competitive tender, won by Swan Hunter by undercutting dockyard bids through extensive use of competitive sub-contracting. Table 5.6 shows that unallocated work won fell substantially below the projections set out in the original management contracts. Only Rosyth in 1989 won more than half of the original estimate. More often than not the amount was derisory. Admittedly the original estimates were based on a much larger programme of work but, even allowing for that the estimates are extremely optimistic compared to eventual outcomes.

Table 5.5: Response and award rates for unallocated naval programme, 1987 to 1991

Unallocated contracts	Rosyth		Devonport	
	Response rate	Award rate	Response rate	Award rate
Royal Fleet Auxiliaries	17%	5%	45%	2%
Small ships	36%	7%	42%	13%
Minor contracts	90%	38%	74%	18%

Source: Director General of Ship Refitting, in HC 23, 1992:25

to the paid-off submarine *Revenge*.

Table 5.6: Estimated and actual unallocated naval work won 1988 to 1991 (in manweeks [sic])

	Rosyth		Devonport	
	Estimate	Actual	Estimate	Actual
1988	6,000	1,315	6,000	nil
1989	15,000	8,402	14,000	nil
1990	22,000	4,730	22,000	1,577
1991	29,000	3,427	23,000	1,626
Total	72,000	17,874	65,000	3,203

Source: BTL and DML, in HC 23, 1992:25

Original targets for winning non-naval commercial work by the contractors proved more realistic. These were reached and even surpassed, with the two contractors winning roughly equal amounts of work, as table 5.7 shows. Although this reflects their relatively modest contribution to overall workload compared to allocated work, this was a rare case of a successful diversification programme in the British defence industry in the late 1980s and early 1990s.

Table 5.7: Non-naval commercial work won by BTL and DML (in manweeks [sic])

	Rosyth		Devonport	
	Target	Actual	Target	Actual
1988	1,000	661	nil	2,750
1989	3,500	3,855	150	3,750
1990	5,500	5,564	3,500	3,829
1991	7,500	7,532	7,000	7,200
Total	17,500	17,612	10,650	17,529

Source: BTL and DML, in HC 23, 1992:26

Diversification into non-naval work has been hailed as a success story. Financial support from the corporate centre and a low liability for the fixed capital allowed Babcock to pursue commercial work employing existing labour. A senior manager at Rosyth identified 'core competencies' with profitable opportunities.

> We actually had targets to achieve as part of the commercial deal and what we decided to do was in the early days to [take] a bit of a sceptical approach ... We looked at the skills and competencies and the facilities at Rosyth and said 'Right, what work can we bring in to fill these competencies and resources'? and we said, 'this is a repair and maintenance place essentially: we refit ships, we do a lot of metal work and do a lot of joinery work and perhaps we could fill the joiners shop with commercial work, perhaps we could fill the

> fabrication shops with commercial work', and that is how we started off ... [A] lot of what you see in the Joinery, Fabrication and Rail is just born out of matching Rosyth's existing skills to new opportunities. We refit ships so why can't we build boats? We started off in a modest way and now we have done several of them.

Serendipity played a part backed, of course, with Babcock International's financial clout. The much praised diversification into rail carriage refurbishments, for example, was a result of buying into the contract through the takeover of Tickford, the firm that had already won it.

> We also looked at railway refurbishment in a similar way to start with and that grew. We saw an opportunity there. We got talking to a company that we noticed in our trawls that had won a contract with London Underground to refit ... underground carriages. We just cold-called and said 'this is our capability. Is there anything we might do for you?' And out of that, to cut a long story short, we eventually bought the company ... Tickford, and we actually bought that contract.

How well the performances of BTL and DML compared during the first five years of agency management soon became central to the competition for nuclear submarine refits. For the industry journal *Defence Industry Digest* (July 1992) the NAO study showed that DML's performance bettered Rosyth's for winning commercial contracts and improvements in direct numbers per employee. As the above shows, however, there was little between them in the amounts of commercial work won, although DML estimated that they would win 18,968 manweeks [sic] in 1992 while Rosyth predicted 16,650. Again in terms of direct hours per employee there was little between them, both improving by around 20 per cent. For most measures broadly comparable performances were found, with Rosyth marginally ahead in the amount of unallocated work it actually won and showing less liability for time overruns, 19 per cent, than Devonport, 28 per cent. But how far efficiency discourse was rhetorical rather than a reflection of improved performance is impossible to discern.

The social contours of restructuring

As described above, where future availability of specific skills on a casual or sub-contract basis might be in doubt the MOD judged that it would be better to pay for the excess labour in the short-term. Where skills might be more easily available or not required in the future the Ministry would agree redundancy payments with the contractor. Table 5.8 shows some of the costs to the Ministry for continuing to underwrite dockyard capacity. At Rosyth, the MOD

paid for 1,987 redundancies in the five years to 1992, 34 per cent of the original workforce, while 5,642 redundancies were made at Devonport, nearly half of the original workforce (HC 391, 1993: 14). The rate of redundancies at Rosyth accelerated in 1991 when 942 were made, nearly as much in one year as in the previous four. A similar trend existed for surplus labour, rising sixfold in value at Rosyth from £4.1 million in 1990 to £29 million in 1992.[12]

Table 5.8: Payments to the contractors by the MOD to 1992

	Rosyth	Devonport	Total
Redundancy costs (to March 1991)	£20 m	£110 m	£130 m
Redundancy costs (to March 1992)	£42 m	£125 m	£167 m
Surplus labour costs (1991)	£18 m	£25 m	£43 m
Surplus labour costs (1992)	£29 m	£15 m	£44 m
Overheads (1991)	£9.5 m	-	£9.5 m
Overheads (1992)	£19.5 m	-	£19.5 m
Totals	£118 m	£165 m	£283 m

Source: HC 391, 1993: 14.

The difference between combined figures for 'natural wastage' and redundancy and the net employment reduction, 750 at Rosyth and 864 at Devonport,[13] indicates that over half of all jobs lost at Rosyth were replaced and around 12 per cent at Devonport. This was necessary, the study argues, to allow BTL and DML to shape workforce skills, knowledge and experience profile to commercial imperatives (ibid: 11). Yet a criticism made by BTL managers was that the relatively ad hoc nature of the job reductions left imbalances within and between trade groups. Due to the emphasis on union consent, BTL were reluctant to directly target the trades and grades they considered 'surplus'. Instead, age or social criteria was employed to select from among the masses of individual volunteers. The result more or less randomly designed the skill contours of the remaining workforce.

[12] A seperate sum of £29 million, including profit, was also paid to BTL to cover increased cost of overheads from being spread across a much reduced workload base due to delays to the start of a major refit in 1991 and 1992.

[13] The NAO study noted that after allowing for 'natural wastage' of 1,515 at Devonport and 360 at Rosyth, the rate of redundancies outstripped the net reduction in the workforce (HC391, 1993: 11). When the number of redundancies and 'natural wastage' are combined, 6,813 jobs were lost at Devonport and 1,405 at Rosyth.

Table 5.9: Employment and redundancy, 1987 to 1991

	Rosyth	Devonport
Numbers at April 1987	5,800	11,460
Numbers at March 1991	5,146	5,510
Net numbers of jobs lost	654	5,949
Total redundancies	1,045	5,298
Redundancies as % of 1987	18%	47%
'Natural wastage'	360	1,515

Source: Commercial managers, HC 23, 1992:11

By 1991 the workforce had declined modestly in aggregate terms to around 88 per cent of its Vesting Day size. The underlying trend was for about one in five industrial jobs to be lost while the number of non-industrial jobs grew by some six per cent. The numerical weight of non-industrials within the core workforce thus increased from just over one in four of all workers to one in three. After 1991 absolute white collar numbers declined by around one-sixth although their numerical weight relative to industrials improved to around two out of every five core jobs. Manual workers bore the brunt of restructuring. So while total core numbers fell precipitously between 1991 and 1995 to nearly half (57%) 1987 levels, industrials were the worst affected, at well under half 1987 strength, while non-industrials retained over 80 per cent.

Two groups of industrial workers fared worst: apprentices and non-craft workers. By 1995 the total number of apprentices being trained was around one quarter of Vesting Day numbers, while non-craft workers were down to about one-third. Craft workers overall retained around two-thirds of 1987 numbers with around four craft for every one non-craft in 1995 compared to around three to two in 1987. Greater concentrations and a much lower reproduction rate for craft workers mean a more gradual, managed decline as the programme of work tapers off after 2002. Fabrication trades show the weakest attrition rate. Trades, such as shipwrights and joiners, who have moved into non-naval work have maintained higher than average residual numbers.

Management restructuring

From the outset new managers were brought in to Rosyth by Babcock to develop more commercial practices, such as project, contract, financial and quality management. Industrial engineering and production managers were also brought in to introduce modern industrial methods. However, for the day-to-day business of refitting ships, few new managers were introduced. A major clear out of dockyard management was impracticable. Existing dockyard expertise blended with more general, commercial practices. Dockyard management would change but only gradually. As more traditional dockyard managers began to be replaced or became subordinate to newer, 'all-round' managers their verdict could be scathing.

Table 5.10:Composition of Industrial workforce, 1987 to 1995

	1987	1991	1995
Craft			
Mechanical	635	543	343
Fabrication	599	581	385
Electrical	473	374	266
Minor trades	390	365	210
Apprentices	595	317	155
Titular and others	110	110	149
Craft total (Minus apps)	2,207	1,973	1,508
Non-craft	1,361	1,062	413
Industrial total	4,163	3,352	1,921

Source: RRD

Table 5.11:Minor trades: 1987 to 1995

	1987	1991	1995
Minor trades			
Coppersmith	112	97	66
Joiner	82	82	60
Painter	89	100	44
Plumber	59	48	27
Coachbuilder	-	-	8
Sailmaker	8	11	2
Patternmaker	8	4	2
Bricklayer	9	6	-
Sheetmetalworker	1	1	-
Upholsterer	11	7	-
Founder	11	9	1
Total	390	365	210

Source: RRD

Table 5.12:Fabrication trades: 1987 to 1995

	1987	1991	1995
Shipwright	348	329	228
Welder	67	89	58
Boilermaker	75	54	46
ICRDB[14]	86	76	34
Blacksmith	23	23	12
Fabricator	-	10	7
Total	599	571	385

Source: RRD

> There are not too many older guys left now. All that experience has been lost. Younger guys with degrees come in on two year contracts and big ideas. For them jobs are just numbers to be processed and they have no particular knowledge of how jobs are done so long as it can be deleted from their spreadsheet. The Industrial Engineer, for example, spent two days last week designing a leaflet to let people know that the new car park is now open. Things like this go on because the overhead men are better thought of than people at the sharp end of production.
> (Supervisor)

Nevertheless, generalist managers with no particular knowledge of refitting processes began to shape work organisation. Central to this has been an attempt to simulate market conditions within the dockyard. Formerly integrated Divisions set up as 'stand-alone' businesses. This meant that centralised functions such as Design and Industrial Engineering were to be 'bought in' as required.

> Very soon I'm going to be a 'stand alone' company and I'm going to have to get somebody to do these things for me. This means that I have to set up a trading agreement or set up some form of arrangement between me and all these different groups of people, whether they be in the dockyard or outwith it to furnish my requirements ... Babcock Rosyth Fabricators have their own accounting set-up ... The Design Division still play a major role in the supply of drawings for any manufactured items. As a stand alone company, I deem myself as just another sub-contractor. Ship comes in, ships wants work done, they are going to go to a number of sub-contractors, I'm one of them.
> (Fabrication manager)

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[14] ICRDB stands for the already integrated 'black' trade of Ironworkers, Caulkers, Drillers, Riveters, and Burners.

Yet 'stand alone' autonomy was largely illusory since Divisions remained substantially dependent on Babcock for money and fixed capital and the MOD for work. Bargaining with the Board for resources continued, with even the internal use of space and plant subject to agreement. With these restrictions an important area for increased Divisional Manager autonomy was the ability to augment the supply of labour power through external sources.

> It is often said that, particularly over the last two years, it is too easy to bring labour in here now. Simply because when people want labour, they want it yesterday, and we can phone up an agency whenever and have them in within a couple of hours or certainly tomorrow morning. If a Division comes to me and says, 'look, I want 20 shipwrights in on Monday', we might throw them a few questions back and say 'well, are you really going to need 20?' But, by and large, if they say 20 they will get 20 because it is up to the Divisional Manager to justify his costing for that 20. It is not our task. If I was going to make any judgements on that I would need to know all the details about the Division. I am not in the business to know all the details. That is the Divisional Manager's responsibility. So before he comes, he knows that he has got to justify the costs himself before he bids.
> (Planning manager)

Greater financial control was expected. Increased autonomy over operational decisions for Divisional Managers was coupled with increased upward financial accountability. 'Everybody is now a budget driver ... on a budget you have a certain amount of cash and you've got to account for it'. As part of the incentive pricing regime payment milestones guided management judgements, particularly about when to add on extra labour or whether to sub-contract work.

> Everything is geared towards payment milestones. If its cheaper to get a job done outside or buy it then they do it. There is less work coming off the refits because they are done less thoroughly. Only obviously damaged parts get repaired not whole systems. Now jobs get fitted in according to the priority to meet payment milestones.
> (Fabrication manager)

Individual rewards improved for senior managers. No longer pegged to public sector pay, Divisional Managers were generously remunerated for their contribution to profitability in a radically revised individual pay and benefits review system. Personal rewards, financial accountability and payment milestones conspired to install a new ethos based on cash and undermine the hold of the service ethos. Meritorious promotions deepened under BTL but, for some, ineffable qualities of the service ethos seemed to get lost. Work relations appeared to become more instrumental under commercial management:

> [I]n this company it does not take you too long to determine who is ex-Civil Service and who is not. There is a sense of service and responsibility and affinity that you don't really get now. I could be more cruel and say that ... a good number of those people who have come in are just more interested in what they are getting in their pay packet at the end of the week or the end of the month or whatever. Now it is clearly not true to say that people like me are not keen on that as well, but I think there is another facet and that is the service ethos.
> (Dockyard manager)

Reorganising shop work

The re-organisation of the Mechanical and Electrical Division (MED) sheds some light on the internal restructuring of work. The Director of Manufacturing accepted proposals to 'rationalise space and facilities' with machine, mechanical assembly and fabrication functions concentrated in single major areas (*Profile*, February 1989). MED was split initially into two operational groups, the Mechanical factory and the Electrical shop in 1988. Mainly mechanical fitters, turners, electricians and electrical fitters refurbished and manufactured a wide range of electro-mechanical equipment, such as valves, pumps, compressors, diesel generators, electrical motors, control systems and pipework systems. The main tasks involved stripping, cleaning, inspection, diagnosis, repair, modification, assembly, machining, testing and commissioning. Such a range of functions were needed for the large numbers of items which passed through MED from ships under refit. For example, in December 1988 alone 750 jobs were completed by the mechanical factory for the refit of *HMS Renown.* Plant and equipment in MED was reorganised after review and the layout of the shops altered to improve the through-flow of work. Obsolete machine tools were removed from the machine shop, which was basically a quick-turn-round jobbing shop supporting the mechanical factory, manufacturing few large-batch items, except on orders for the MOD's Stock Manufacture and Repair programme.

With thousands of individual jobs passing through MED a major activity was monitoring. In order to conform to quality standards set by BS5750, which replaced the MOD's own AQAP1 system, a reliable check on the status of any job should be possible. A computer-based Shop Floor Control System, (SFCS), was installed in MED to allow transparent real-time information regarding the location, status and incurred cost of any single item of equipment. But this elaborate technological fix has difficulty in coping with the small scale, quick turn around nature of jobbing. Instead, it appeared to one supervisor as a vehicle for aspirational junior managers.

> The big thing is the Shop Floor Control System, SFCS. This was going to solve all the problems. Younger, ambitious types were promoted to develop and implement SCFS. But they never got the right system for our needs. SFCS can do miracles but it is too sophisticated for the things we need it for, which is basically a question of job traceability. It spews out reports and processes chunks of data. But when it comes to a rush job it takes too long to feed all the information in so SFCS gets by-passed in order to get the job done. As a system it is a misfit because it does not marry up to what is used in the rest of the dockyard. The dockyard does not plan jobs as a single process.

Instead of jobs passing through the individual sections of MED, informally at the discretion of the supervisor, control was now posited with the producers of documentation and monitoring systems. This has led senior managers to believe that the actual time taken on jobs correspond to the time recorded on their spreadsheets.

> We don't con anybody. In the past figures were forged, a fifty hour job might get done in twenty, this is a hundred hour job but it takes you five hundred, and you cover the hours and you shuffle them all around. We don't do that any more. If its forty hours and you've got fifty hours you book forty, if this takes twenty hours and you've got one hour you book twenty. We now have more accurate data for packages of work.
> (Fabrication manager)

Supervisors, instead of controlling the flow of work through their sections, are now supposed to be controlled by SFCS and BS5750. However, because supervisors circumvent the system what actually gets done, when and by whom can remain opaque. As one said, 'All the talk is about 'continuous improvement' but mostly its just common sense, like when they moved the drill sharpening machine closer to the drilling machines itself.' Spreadsheets give the illusion of rationality and traceability; supervision is a rather more messy affair, which still relies as much on tacit knowledge as on formal procedures.

Numerical flexibility: BTL's labour market policy

The other major trend in the four years after 1991 involved an increasing use of both short-term industrial and non-industrial workers. Evidence shows that two forms of flexibilisation, numerical and functional, emerged at Rosyth in the 1990s which did not exist previously, or only on the fringes. A further form, specialised sub-contracting, always existed before for particular jobs, such as electronic systems or nuclear-related technologies. Most tertiary functions became subject to sub-contractorisation. This section will focus on the two key

shifts: first, numerical flexibility employing a second periphery and a more limited functional flexibilisation of the 'core' workforce.

According to Table 5.13, between 1991 and 1995 peripheral industrial workers grew tenfold while non-industrials grew nearly fivefold.[15] On taking up the contract to manage Rosyth, BTL assured the workforce that it had no intention of adopting a dual labour market. Instead of numerical flexibility based on external labour markets BTL wanted internal functional flexibility. In this way it hoped to enrol workforce commitment to a long term 'high trust' strategy. As one study put it, BTL 'consciously rejected the adoption of a short-term strategy relying on numerical flexibility to fine-tune labour costs to workloads' (Gennard and Kelly, 1991: 88). Yet the same study reported that in fact numerical flexibility was already well-established: 'Numerical flexibility initiatives have involved the use of short-term contracts and sub-contractors to cater for short-term peaks' (ibid.: 83). However, this was more than simply a response to short-term workload fluctuations but a conscious strategy entered into with the customer organisation for reducing labour costs. As Chief of Fleet Support said, 'We set capacity in our negotiations with [the commercial managers] well below the peak loads that we foresee, specifically to encourage efficiency, not least by sub-contracting and the use of casual labour' (HC 391, 1993: Q68).

For dockyard planners numerical flexibility is simply a function of fluctuating workload. As one put it:

> A Ministry programme always conspires to give you peaks and troughs. It is not a chocolate factory ... production line where you get a straight line workload or even a straight line increasing workload or decreasing workload. It is all over the bloody place. It is like looking at a set of mountains on the horizon. It is up and down.

Instead of shadowing peaks, however, the permanent labour force is kept at a level below the troughs. Traditional levels of dockyard slack and under-employment are replaced by a tight, 'just-in-time' labour supply.

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[15] All the tables derived from data supplied by RRD take only a single week for the financial year to indicate the changes between 1987 and 1995. They are not averages for the year and therefore cannot be taken as entirely representative. As random weeks they may over- or under-estimate the figures for the year. Nevertheless, with this important qualification some sense of quantitative shifts in the workforce can be ascertained. For 1987 the second week in April has been given, for 1991 the final week in March 1991, and for 1995, November 1995, the week when the data was compiled, is given.

> What the Ministry did in those days, was that they generally kept the workforce that met, if not the top of your peaks, pretty well up there. Whereas nowadays, the name of the game is to keep your permanent workforce at a level just below your troughs. Then you top up with temps and agencies

A Rosyth worker who worked for Babcock at Renfrew in the 1970s recognised what he thought was a consistent approach.

> What Babcock are doing at Rosyth is nothing new. They want to reduce the workforce to a skeleton staff, to the bone, and then rebuild it exactly how they want it. Babcock introduced temporary workers at Renfrew around 1973/74. But once they came in it couldn't be reversed. This was true after a three month strike in 1975 against temps failed.

At Rosyth no similar industrial action occurred.

In 1987 considerable use was already being made of non-industrial temporary labour, largely related to the setting up of new management structures in the transition to commercial management. By 1995 the use of short term labour had become a routine part of the management repertoire for 'growing' the workforce during peak workload periods. This was particularly the case for industrials. The presence of industrial 'casuals' was negligible in the past; by the mid-nineties 'casuals' accounted for one in five industrial workers. The Resource Management team attempted to optimise the allocation of direct labour against the planned divisional workload by making a 12 week forecast of labour needs and making actual allocations four weeks ahead of work starting. Labour allocation was often subject to last minute revision because of changing workload levels or types of work and so required a sophisticated system for matching available skills to particular functional requirements. A computer database information held information on specialisms and qualifications of the manual workers enabling quicker and more accurate decisions on labour allocation. By the late 1980s 2,000 industrial workers were covered by this instrument. The Resource Manager saw his role in these terms

> The constant aim is to maximise the use of existing resources within the Dockyard and this frequently involves discussion with the trades unions to agree flexibilities. The last step is to bring in casual or sub-contract labour. We also try to minimise the number of moves people have to make in order to build team spirit and identity, but there is room for much improvement in this respect. (quoted in *Profile*, February 1989)

In the early 1990s the labour function was further displaced from BTL's direct organisation. Agencies specialising in supplying labour for short-term contracts mushroomed around

Rosyth, giving management an additional instrument for numerical flexibility to match changing workload patterns.

> You can imagine that labour is always migrating from one area to the next area ... If, [say], Ships Division require additional people then it is up to the Resource Manager to get additional people. They can do that in [three basic] ways. [First], you can do that by trawling within the dockyard to see if there is any spare capacity elsewhere and placing them in Ships Division. If there is no spare capacity elsewhere we will go outside and bring in either, [second], temps or, [third], agency staff.
> (Planning manager)

Table 5.13: Core and periphery for industrial and non-industrial workers, 1987-95

		1987	1991	1995
Core				
Industrials		4163	3352	1921
Non-industrials		1629	1733	1362
	Total	5792	5085	3283
Periphery				
Industrials		53	42	425
Non-industrials		200	47	234
	Total	253	89	659
Total industrials		4216	3394	2346
Total non-industrials		1829	1780	1596
	Total	6045	5174	3942

Source: RRD
Note: core are defined as 'permanent' staff, periphery is defined as 'temps/agency'.

This difference between temps/casuals and agencies marked a significant step in offloading the responsibility for reproducing labour to private organisations as distinct from internal control. On the one hand, temps work short-term, defined contracts, supplied through Babcock's own list of mainly ex-dockyard workers or through lists maintained for the dockyard by local Job Centres. Agencies are independent firms trading in labour power.

> [Temps] are short-term casual employees. ... that would come from the Labour Exchange or Job Centre and would come on the company payroll and they would end up getting the same rate of pay as company employees. The alternative is to go to agencies because there are a lot of agencies that have sprung up over the last three years. I think they have always been in business but they have increasingly grown over the last three years. They supply the 'body shoppers'... They are very competitive as well so most of our external labour comes from agencies. But the unions do not like this one bit.
> (Planning manager)

Agencies now cover

> the whole range of skills from high class electrical people to support workers, non-craft labourers. There are companies nowadays that will supply you with anything you want. Equally, their task is made a bit easier because since Vesting Day we have come from approximately 6,000 bodies to ... 3,400 ... So a lot of the labour that we have is brought in externally is ex-dockyard labour in any case, guys that have gone out on severance over the piece.
> (Planning manager)

However, the same manager was blunt about the pros and cons of large scale use of labour only agencies:

> With agencies we let other people make the investment. There is a harder-edge to these companies. But whenever you start to let a culture of 'just get the job done kind of thing' with a more relaxed approach to safety, then that has a habit of creeping across into other areas as other dockyard managers see them getting away. For shotblasting and activities associated with hazardous materials the neighbourhood workers also get caught in it.

Both macro and micro level planning functions became subtler and more precise. Investment in IT enabled the co-ordination of work programmes, docking programmes and the forecasting of the individual labour skills throughout the dockyard to be centralised. The Resource Manager drew attention to the detailed information available through the reporting structures, even down to the skills and knowledge of individual workers. The key is to fully use permanent labour before bringing in peripheral workers:

> We make sure that the utilisation [of labour] is as high as it possibly can be. Take week 38, for example. Out of 219 we have one spare shipwright but five temps are in. So on Monday past one of those temps should have gone out to give us 100 percent utilisation of shipwrights. And so on mechanicals, there is twelve available from Subs and Ships. But there is three temps and two agencies in Weapons and Electrical Division. They've been on a specific project for some time and have built up expertise. In theory, we want to get rid of them and replace them with five from the twelve to increase the utilisation. But it's not practicable to do that. So we've ended up with twelve mechanicals spare this week. Electricals there's two [spare] but there's eleven temps and five agencies in there. So there is sixteen casual people in there at the moment. Eleven painters who were spare are on sub-contract work at VSEL. So we've taken steps to utilise them ... making money for us. Three plumbers spare, ... one coppersmith spare, one temp and five agencies ... joiners: balanced ... support workers: twelve available ... Those people will be utilised ... they won't all be sitting around on their arse ... So we have high utilisation rates ... For production week 38, we actually have 28 spare people but a shortfall of 149 others ... We've got four shipwrights short, thirteen electricals, 52 welders short, 30 ICDRBs. Whilst we've got 28 spare we've had to bring in 150 other types. You never strike a

perfect balance. But nevertheless, of the permanent employees that's a good utilisation rate.
(Planning manager)

This relied on a deepening centralisation and rationalisation of planning to minimise and control for uncertainty. Planning became programme specific rather than discipline specific.

You have got to make sure you can berth the vessels and that there is a good interface between the programme [of work] and what is possible in terms of docking interfaces. We also do a lot of work in terms of forecasting the individual labour skills required throughout the dockyard. So we draw a programme up to start with and then from that programme we will draw up a corresponding workload programme, and from that programme we will determine what sort of skills we require. That has become quite difficult as well because [its] part of the process of developing in a commercial way. It used to be nice and easy because we used to bring a vessel in and there was all different cost centres. Each cost centre applied to a trade so there was a technical cost centre on a frigate, there was an electrical cost centre, there was a welders' [cost centre], and on it went.
(Planning manager)

Until the early 1990s the trade unions would attempt, often successfully, to have 'casuals' made permanent if their 'temporary' employment lasted longer than some specified period, usually six months. In this phase 'casuals' would typically be ex-dockyard workers either contacted directly or through the Dunfermline Job Centre and offered an immediate start for a specified time period. In the second phase employment agencies would be engaged to supply specific kinds of labour for particular projects. Again the agencies which sprung up around the dockyard would mainly have ex-dockyard workers on their books. 'Casuals' would often be on the lists of more than one agency to stand a better chance of even short-term employment. In the first half of the 1990s the use of peripheral labour markets threatened to turn into a deluge on some ship refits. On a ship like *RFA Sir Bedivere*, undergoing an innovatory ship length extension process, 'casuals' were reputed to form the greater part of the labour. One interviewee recalled 'casuals' from Tyneside sleeping in a van to save on accommodation expenses.

With most casuals and agency workers former dockyard workers returning for a brief period to operate machinery they may have once considered their own can be a harrowing experience

With temporary contracts there is constant uncertainty. You are in 'limboland' with the letters issued on a week to week basis. But after three years unemployment I enjoyed

working again and the company of the men and, of course, the money. But you're working with people who are going to be doing the same job next week when you're gone. I just try to keep occupied with the immediate job in hand although its hard to see other people working the machine you were on for over ten years, your machine, using your tools, your fixtures.
(Temporary fitter/turner)

Functional flexibilities

To illustrate some of the issues surrounding functional flexibility the case of the fabrication trades will be considered. This was viewed as a major breakthrough for overcoming trade demarcations across the yard. The fabrication trades union, GMB, agreed to reduce trade demarcations within the Fabrication and Outfitting Division (F&O). An 'Integration of Trades Agreement for Fabrication and Outfitting' (ITAFO), signed on 12 November 1990, allowed the introduction of 'composite group working'. Composite groups were to be composed of Shipwrights, ICRDBs, Smiths, Boilermakers, Welders and Machinists under the direction of a single supervisor. As the company newspaper put it, 'Each member of the composite group will primarily work on his [sic] own trade but will receive training to develop additional skills to allow greater flexibility within the group. The Agreement ensures that there will be no loss to trade identity but allows for composite group members to have a primary skill backed-up by a secondary skill' (*Profile*, No 21, November 1990). The ITAFO was viewed as a necessary stage in overcoming three related difficulties in the Fabrication areas: first, the F&O division faced a gradual decline in traditional MOD work; second, it was not competitive in commercial markets; and third, the skilled workforce were spread over a large area. In 1989 only five per cent of F&O work was commercial but this had risen to 25 per cent a year later and was expected to increase further to offset declining MOD work. The F&O Manager argued, 'Our competitors had an edge because of their superior facilities and their technology but this is a problem which is now being addressed through a substantial investment programme. With improved facilities and cost effective space utilisation the opportunity exists to achieve higher productivity and become more competitive' (*Profile*, No 21, November 1990).

Ten main advantages of the ITAFO were listed,

Integration Benefits To Company and Employees

- Skilled Level Enhancement
- Improved Competitiveness
- Improved Cost Effectiveness
- Reduced Wasted Time
- Improved Job Satisfaction
- Flexible Response To Load Fluctuations
- Less Job Tedium
- Improved Job Security
- Reduction in Rigid Demarcations
- Opportunity for Growth

(*Profile*, No 21, November 1990)

Even though they would perform additional tasks, the unions emphasised 'improved job security' under the ITAFO. The number of shipwrights, for instance, was planned to rise from 70 to 160 in the F&O Division. Central to the union's view of the ITAFO was that training would take place. With previous integration agreements for particular projects the unions complained that 'real' training had never taken place. With the ITAFO training began almost immediately.[16] The way that the agreement was reached was seen as indicative of co-operative industrial relations style, in some ways more important than the final agreement itself. 'Participation', 'involvement' and what the GMB convener called 'goodwill and a true 'Working Together' spirit on both sides' made the ITAFO possible. The ITAFO came about when in February 1990 a move to rationalise space within F&O Division led on to early discussions about group working. After examining the use of group working by other companies in the UK and abroad, in March and April a series of consultation meetings were held to gather information about how to improve productivity. Such a 'sedate' approach to the negotiating

process was deemed necessary because of the potential for inter-trade disputes which could emerge from a hastily constructed agreement.

The GMB had previous experience of failed integration.

> The first agreement was in the Small Boat Unit and was designed to go to a seperate business unit to gain lots more work. Great plans were designed for it. It would be a model for the country. There was a 'working together' relationship already in the area. We had shipwrights for the wooden boat-building, we had two mechanical fitters and electricians and a few labourers. They generally worked together anyway but obviously the dominant trade was the shipwright. They wanted to bring lots more people, trebling the size of the Small Boat Unit from about 16 to about 50. That was the first real integration agreement in the dockyard. Unfortunately it proved a total disaster and shut. (GMB convener)

When it came to integration in the F&O Division GMB shop stewards based in the workshops were initially given the freedom to negotiate 'responsibly'. After a few months of little progress the GMB convener intervened and discovered that shop stewards wanted to control every work detail instead of reaching a broader understanding. After the Small Boats fiasco the key issue for the GMB convener was training and en-skilling not detailed control of tools and processes.

> I have to say that after months and months after getting nowhere, I went to the meeting, asked management to give a presentation on how far they had got. They virtually had every nut and bolt designated, which meant that there were going to be huge amounts of grey areas and huge amounts of disputes. Integration means the integration of skills and if we were going to do that we only needed a general agreement outlining the training commitment and a fine-tuning meeting every couple of months or every quarter.

The convener balanced between worker demands to retain detailed trade controls and management demands for more sweeping relaxations, with promises of training. By the mid-1990s training still seemed elusive, with management reluctant to commit resources. As a senior steward put it:

> ITAFO failed because of a lack of training and co-ordination and the realisation that you need specialisation in some parts of the Bay. The move to a more general integration still lacks the commitment to training. People still think in terms of their trades. But the threat of sub-contractors is changing this a bit. The main problem is that management cannot

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[16] Machinists and ICRDBs went on a two-week marking-off, assembly and sheet metal appreciation course, shipwrights and machinists trained in grinding and machine burning and welders spent two days on grinding.

manage. Once the easier demarcations are overcome it is difficult to see very much further room for a genuine overlap between trades.

Despite this, more scope existed for integration in the workshops than afloat, where specialised skills are needed for various systems and sub-systems fitted into ships. Even so, afloat workers became subject to limited flexibilisation. A new system, 'zone management', dedicated specific parts of the ship to mixed-trade work gangs under a single supervisor. This was designed to allow a more flexible use of afloat workers. Supervisory grades became responsible for a particular 'zone' of the ship and lost their single trade identification.

> We have introduced what is called zone management ... You now have a 'zone forward' a 'zone aft' and a 'mid-zone' site. And each of these zones carry a line supervisor and the line supervisor has got a number of functional people [sic] under him. So instead of an electrical supervisor having an electrical squad, you could have an electrical supervisor having a squad of mixed skills now.
> (Production manager)

In consuming labour more flexibly, however, zone management creates still other problems. Tautness on labour use depends on the effectiveness of monitoring, recording and planning systems. Zone management, instead, increases the indeterminacy of labour power for senior managers since it relies more on discretionary personal, intuitive decision-making at the point of production and less on remote bureaucratic forms.

> Now [zone management] leads supposedly to greater efficiency but it causes havoc in other directions, in terms of accountability and in forecasting terms. How do you forecast for the next two years in terms of the number of sparks you require or shipwrights or whatever?
> (Planner)

This also has implications for the so-called 'efficiency dilemma', which more sophisticated communications cannot disguise. Squeezed between functional and numerical flexibilities labour can become more indifferent to the nature of work. As one 'casual' put it,

> People don't seem to care about the place now. The mood is vastly different. There is a perpetual cloud in the middle of summer. The workforce are more alienated, the joviality of the past is gone.
> (Temporary boilermaker)

Even the planners are aware of the demoralising effect of marketising work: 'You can only sub-contract work for so long until your whole fabric breaks down and end up in the shit'. Formerly comfortable white collar positions were also aware of the stakes involved. With temporary workers moving in and out of jobs continuity and accountability diminishes. Peripheral labour represents labour market vulnerability and forms a protective cushion for permanent workers facing lay-offs with peripheral workers released before compulsory redundancies can be called.

> Through severances, through Babcock bringing in people from the west, who know nothing about dockyards, putting them in charge of sections, etc., the continuity is not there. Also the safety factor is not as good as it used to be because they now employ a lot of contractors. The Drawing Office was hit. When I made a move seven years ago I was replaced by the first contractor in the Drawing Office. That was the first time I had even thought of any contractors coming in to do drawing work. But since then it has been quite frightening the numbers coming in. As the permanent staff have gone out on severance the numbers of contractor staff have built up. The contractor staff have been coming from the other yards. I'm working now with a variety of people. In my own section its something like five staff and five contractors. It's about equal.
> (Draughtsman)

While claims for improved 'efficiency' are difficult to justify, changes have been made in the nature of the employment relation. On the one hand, within production workers are expected to repeatedly prove versatility and, on the other, a sense of labour market vulnerability has been made proximate. The main point about restructuring in this case has been the various ways in which labour has been made more pliable. Yet, Babcock have not yet gone on the offensive to dictate a radically different employment relation, at least so far as core workers are concerned. For some, the 'Company has played it safe by, one, enlightened employer practices and, two, buying time, rising pay rates, etc. with everything offset by the MOD.' Senior managers at Babcock admit that the nature of restructuring has been modest.

> There has always been an observation made that we had not been radical enough pursuing change. I think we have got a good reputation for the amount of new work we brought in, the commercial work, and for the fact that our sites appear from the outside to be well managed. And they have been well managed. The one thing we are criticised for is that we have not been radical enough.

To see why this might be the next chapter considers the role of dockyard workers in more detail.

Chapter 6

Dockyard unions and commercial management: Honeymoon and recrimination

From the levels of militancy shown in the years 1984 to 1986, dockyard unrest quickly subsided as the local dependency on centralised leadership and lobby politics was re-asserted in the latter phases of the campaign. This return to workplace normalcy prepared the way for a three year 'honeymoon period' after the new commercial managers took over in April 1987. Initially, pay levels were improved, a new Code of Behaviour for employees introduced, a new industrial relations organisation and bargaining machinery was created. A general mutuality developed between the new managers and the trade union conveners. Clearly, a modified service ethos was being reconstructed here, albeit on the basis of the 'risks and rewards' of 'competitive markets'. The decentralisation of bargaining also diminished the power of Whitleyism as a set of rigid, routinised bureaucratic reflexes at once preserving and limiting labour's organisational capacities. New organisational capacities for labour around the twin poles of bargaining independence and a corporate responsibility to make the dockyard efficient and competitive were in the process of creation. Lobby politics was held in abeyance since key bargaining matters were being decided locally for the first time, although lobby politics would be resurrected with a vengeance for the campaign to refit the Trident submarines at Rosyth between 1991 and 1993.

Not only were organisational capacities reshaped but leading individual actors from both management and unions were replaced in the process. In the first few years there was a rapid turnover of full-time shop stewards and conveners. Some found a place as union negotiators in the new structures, many of the longest-serving union conveners elected for voluntary redundancy in the first year, while some of the shop stewards most active during the anti-privatisation unrest were promoted to staff BTL's new industrial relations organisation. Thus the unions lost the carriers of the old organisational capacities and, to a lesser extent, the potential carriers of new forms. Around a numerically smaller layer of conveners who became active in the late 1970s and early 1980s, and thus less encumbered by the old organisational order, BTL attempted to 'professionalise' industrial relations around emerging capacities of mutuality and strong, independent but responsible bargaining. This enhanced role for local union conveners met with little resistance as opponents became marginalised; more usually it was positively embraced.

This chapter will deal with the way in which the four year 'honeymoon' between BTL and the dockyard unions was created and how it turned sour in the early 1990s as a more aggressive

management style emerged. Since BTL have been the subject of academic praise for their employee relations here it will be suggested that a unique set of conditions, operating for four years after 1987, enabled BTL to come to a modus vivendi based on secure profits, little risk and a perceived union threat. After 1991, with the death of the main architect of the modus vivendi, a perceived risk to profits and seemingly pliable trade unions, attempts to hasten the restructuring process relied on more traditional management ploys. Employment relations at Rosyth will be considered against recent academic studies in the final chapter.

Workplace relations

Industrial relations was identified as the key area by Babcock on assuming management of the dockyard and has since been repeatedly identified as a management strength. A by-product of the anti-privatisation campaign was that Babcock and the MOD took workplace unionism seriously at Rosyth. If the unions lost on the fact of commercial management they were able to present a potentially disruptive threat.

> [The campaign] certainly told the people who were coming in, Babcock, that we weren't going to be just walked all over. I think it was made clear that this group of people were fairly well organised, had a pretty good campaign, could get high profile in the papers, on the television, there was lots of support. Anybody coming who thought that they were just going to come in and do this, this and this, knew full well that that was never going to be acceptable to the people here because we bumped our gums a lot. By being as loud, as vociferous, as pushy, as aggressive as we were what we did was we told them that 'OK you can come in but you are not going to shove us around. You can maybe shove us a wee bit. But when we come to negotiate we come in with people standing behind us. Its not just me and the three people at this table. I represent people who have been prepared to walk up the road. When we come to negotiate I'm talking from a position of strength'.
> (Boilermaker shop steward)

Recognising this early, Babcock cultivated union conveners before they entered the dockyard in 1987, at a time when the union campaign against commercial management was still continuing. BTL struck a conciliatory tone in issuing an amnesty on conduct and setting out a simple disciplinary procedure in a colourful Code of Behavior booklet.

> They employed the right people to calm everyone down and say, 'we're not this bad bunch that you've been told we are 'We are a good bunch. Here have a pay rise'. They did that straight off. And people started saying 'well, they are not such a bunch of bad guys'. They went through our conditions of working, put in a new set-up, negotiated it, put their little booklets out and they'll give you the yellow card and the red card. It looked as if this was great, you know. It was almost as if, 'do you want a box of chocolates boys? we won't have any drinking anymore. There's been an accident'. They came across as your big brother and they made a good start. But you can't kid them all all of the time and guys were convinced that it wasn't all sweetness and light. And it hasn't been all sweetness and light that's for sure.
> (Boilermaker shop steward)

BTL worked hard to communicate their 'working together' message to a sceptical workforce. Early company statements were littered with team metaphors.

> The company at that time had a particular style. They wanted to change things, they wanted a 'working together'. There was a couple of cliche phrases used but they were the ones used all the time: 'mutual trust' and 'cooperative action'. These are easy words to use, especially the trust one, but you've really got to deliver on trust. Abuse it once and you will have a hell of a lot of other instances to make up for it.
> (Industrial relations manager)

A new Industrial Relations team was created in 1987. Managers with wide experience of unions in an engineering environment were introduced, complemented by a long serving dockyard Industrial Relations Manager. After a whole series of interviews, including psychometric testing, a team of six Industrial Relations Officers, IROs, were appointed, including an ex-AUEW convener, two ex-EETPU shop stewards and an ex-IPMS representative. Initially, IROs were based in specific areas of the dockyard and worked in pairs, consisting of an ex-union IRO and a manager, 'to integrate ourselves into the various areas, to make ourselves known, what we could do, what we could help on'. IROs could draw on their own background to communicate sympathy and understanding in helping managers make the transition from status-ridden, command structures of the Civil Service to the more egalitarian sounding mutuality of commercial management.

> I had also been a manager so I could say to people 'look, I've been through all that, or I know what you mean by that but you've got to then understand here's what we're saying to them, here's what we're talking about. You don't just say get it done because I'm telling you, because the management say so, its because we're working together'. There was a certain style coming from the Industrial Relations Director right away that it wasn't all about sacking people and going up the road, it was about building a future together. It was easy enough to build on that.
> (Industrial relations manager)

Personal relations between shop stewards and managers further helped cement the new mutuality. One IRO said, 'I knew most of the conveners and shop stewards ... and the IRM was very good with the conveners because he took time to explain what the new industrial relations was all about. They saw the procedure as something they could live by or work to'. One way of doing this was the amnesty on previous conduct and offering employment to the workers dismissed during the Lamont incident. Still some over-zealous managers had to be restrained: 'You had to impose a certain discipline on first line supervisors and managers that they couldn't think back to the Black Book which some managers kept'.

However, the attempt to 'professionalise' personnel issues under IRO leadership, now called Human Resource Management, has instead created what some conveners see as a new layer of experts who have taken away any discretion from local management.

> Because the IR organisation have taken control, I can count on the one hand the times that local managers actually control a hearing, the vast majority of hearings in this dockyard are controlled by Industrial Relations. They are meant to be there as independent and mutual assessors of the situation to help both management and the trade union side. They actually run the hearings and the manager sits there like a little lost boy, not making decisions at all.
> (Union convener)

Pay

The first real test for the new arrangements came in 1988 with the first pay deal negotiated locally. Pay 88 rationalised the pay structure, eliminated allowances, simplified gradings and raised basic pay. In return, unions agreed to work more efficiently. Union conveners recommended acceptance of the package but workers in the main craft unions voted against it, since many of the allowances were related to specialised craft-based jobs. On the pretext of minor changes to the offer a second vote was held, which only the AEEU and Shipwrights rejected. As one Manager admitted

> it just scraped through by the skin of its teeth on the back of the non-craft side, on the back of the Transport and General Workers. The craft unions felt that they were being used to a large degree by the block power of the Transport and General Workers. There is no denying that we knew what we were doing on that one. Pay structure had to be simplified and we had to get rid of the allowances. The supervisor wasn't getting freed-up to do the IR part of his job because he was that busy filling in forms and busy handling complaints about who was getting what allowances and who wasn't. There was a recognition that we had to get away from that and the money was put up front, it was £5 then it came up to £6 and £6.50 per week was what we settled on to buy that particular part out.

For conveners of craft unions Pay 88 was difficult to sell because it attempted to simplify a complicated Civil Service pay arrangement that had taken decades to evolve. As one convener said,

> But the biggest mistake management made was making it a book. And it was a book. It was huge and very difficult. There was something bad in it for everybody; whatever passage you went to, some people liked that but didn't like the next thing. There was a lot in it to please people but one little item might have made it a no vote. It was a very difficult thing to put over. I remember starting off [addressing the mass meeting] and thinking 'I'm going to be here for three hours'. The paperwork that went out there must have cost a fortune. I don't think there was bad in it for anybody apart from people who getting allowances.

After losing the first vote the conveners fell back onto the National Officials, who they thought they had just won independence from to negotiate directly. Their credibility with management and with their members hung in the balance.

> We got guidance from our National Officers whether to put in a 'failure to agree' which would have went to Stage 5 to be dealt with by local officers and then if there was another vote no it would go to the national officers and obviously industrial action. We were a bit worried ourselves that it could be seen as going back and having another vote just to get it through because it fell by a few votes. I think it was under 100, around 86. The trade unions believed and still do that it was one of the best deals that we negotiated. It was big. The national officers said that if there was any change we should go back because if you don't you haven't completed the procedure. I got slammed at my meeting. I obviously had to do what the majority view [of conveners] was. I think my view at the time was to 'fail to agree' but I accepted the majority decision to go back [to the members]. There were some tense people there, they were a bit uptight and didn't really know what to do about it so they got advice from the people they knew could give them proper advice and that was it and it scraped through.
> (Union convener)

With the abolition of allowances like Dangerous Employment many workers were reluctant to work in dangerous conditions or at heights.

> What they done for a considerable period after that was: 'I'm not going up there. You'll need to scaffold that'. People done jobs in certain positions that they wouldn't have done if they weren't getting the height money. Although I wouldn't say that they would do things that was totally unsafe, they maybe done things that they would refuse to do when their Dangerous Employment money got taken from them.
> (Maintenance worker)

If the weight of the TGWU was used to push Pay 88 through on the strength of improved wages for its members in the short term, longer term they were thought to be storing up trouble. A senior Industrial Relations manager pointed out,

> over the years we've tried to bring back a difference because as the non-craft continued to close the gap on the craft they would price themselves out of a job. That's where we've got to now. We are paying over the odds. When we do wage surveys and we look at the fitter at Swan Hunters or Yarrows and the fitter at Marconi or Ferranti, there is a nearness to it, perhaps the Rosyth boys are a wee bit up or a wee bit lower. But when you look at the non-craft, we were out of the park. We tried to take that back to the conveners and create a difference. But the conveners never wanted to do it because they didn't want to say that they were better than the T&G, they couldn't come to terms with it although they felt it in their heart of hearts. But that was never listened to, try as we could. We slipped in a wee bit of a difference in Pay 93 but it was minor differences. Since then we've stuck to the wage rate so that if its a 2.6 [percent rise] its almost to what it was back in 1988.

Union reasons for resisting a widening of the craft/non-craft differentials are to try to retain unity but at the same time recognising that the labour market operates to widen differentials. Once the law of the labour market is accepted to determine who works for what rate under-qualified workers suffer first. According to a craft convener,

> we've managed to curtail management attempts to produce any further differentials between craft and non-craft, i.e. where craft get 5 per cent and non-craft get 2 per cent. Now they have attempted it on a number of occasions and certain craft unions would have been quite happy. One of the problems is that policy [of equal percentage rises] ensured that the T&G were going to lose lots of people. Obviously if they keep going along that line they become too dear. They were, and I won't say well-paid because I don't think that's the right thing to say, but they were better paid than most firms across the country for what they did. Some of the grades were getting more than craftsmen in other shipbuilding yards. The fundamental thing is that when there is a surplus workforce out there that could operate under either sub-contracting or on an agency basis, which meant they were going to get them at fairly cheap rates. You can see people in industry getting £2 or £1.50 an hour, in here they were on £5/£5.50 an hour. So while all unions have suffered they have suffered tremendous losses, about a thousand over eight or nine years, which is a big price to pay for higher then average wages in the industry. They knew that, they had opportunities to get less but the politics of it was going to be very difficult. They haven't lost anybody from compulsory redundancies, it was all voluntary, but some of the areas have been 'forced' voluntary, if you know what I mean. They didn't see any future for themselves so even if they didn't want to they left.

For managers this is simply an inevitable consequence of the general nature of non-craft duties,

> On the non-craft-side we were always doomed. We were over-manned, there was always too many labourers at hand. The shipwright when he was doing his lagging for his structural material or his ventilation system he would dump the [lagging] at the back of him and there was a squad of labourers there to pick it up. There was nothing wrong with the shipwright, as you do at home with the painting and decorating, you put the scrap paper in the bucket. Therefore you could reduce the number [of labourers] and become more effective.

Pay claims gradually became more 'professionalised', or at least the form they took did with the unions doing detailed research on comparative wage rates. Before even arriving at the claim itself it has already been subject to informal dialogue. In 1995, management let it be known that they wanted a 'wage deferment', as part of an exercise to hold down costs in preparation for the sale of dockyard assets. Instead of a wage increase an ex gratia payment was offered. After holding out for months, reluctantly the unions accepted the lump sum payment.

Non-industrial unions are seen by management as continuing to be too close to Civil Service attitudes in defending terms and conditions. A manager noted the difference with more pragmatic industrial unions,

> At the start it was IPMS, the Civil Service union. It would have been better if we had got into bed with a staff union that was used to dealing with industry at large rather than just the Civil Service environment because they still stuck to the Civil Service in the IPMS. And we suffered from that because it has not totally broken that linkage from the past. We still have problems with IPMS members or IPMS senior officials. I am thinking in terms of the old dockyard and the Civil Service. A lot of the conditions that people enjoyed, like pensions and redundancy rights, are still linked to the Civil Service and they may want to keep that protection.

Clearly, 'working together' in industry differs from 'working together' in the Civil Service. The 1995 wage freeze was rejected by non-industrial workers to begin with, who began an overtime ban, although the offer was reluctantly accepted five months later.

> The dispute we had with staff recently I think gives a clue that we were looking to mark time and not give an annual increase. So we are improving our competitive performance, that is assuming that our competitors are not doing the same thing. And that was something the staff found very hard to swallow because they had been used to inflationary rises every year in the Civil Service inflation-proof environment. So that was a difficult wage negotiation this year and we really stood up to them. I mean OK it was really quite difficult but I think it is a sign of the times to come.
> (Senior manager)

Unlike industrial union officials, Civil Service union officials failed to communicate the severity of management's dilemma

> On the industrial side we had to get the national officials in to help us secure the deal. On the staff side we had the national official up and he did not say it formally outside, but he said it to us and his own people, that he felt that the deal that management had offered was the best they could get and yet he still would not go along with it. Yet this year we had from the staff side a bit of a division and if the national official had been prepared to stand up out there and say 'this is the best deal you can get' we might not have had a rejection of our first offer.
> (Senior manager)

Relations after 1991

The honeymoon with BTL lasted until 1991 when there seemed to be a fundamental change in the yard management. The Senior Personnel Director died and left a vacuum between the unions and senior management. This was filled by the then Chair of the Pension Trustees. Goodwill between unions and management was rapidly eroded and a green light given for a more command and discipline approach. As a craft convener put it, the new Personnel Director,

> basically sort of delegated his job to all the rest of the managers across the yard, giving them free-range. And in they went where before they hadn't. All the nasties, all the wish lists and everything started to come out. What we had up until then, unevenly, was the fact of a general

> [consensus]. We never actually ever gone out of the dockyard. Everything was solved internally. On a collective issue it was always done within the dockyard. There was a certain amount of, if you like, realism, no not realism, what is the word I am trying to get at, a certain amount of acceptance from the members that if we went to them with a recommendation that would generally be acceptable. There might have been a few moans, there was always grumbling internally. But that's been destroyed.

The new, harsher management attitude mistook union pragmatism and cooperation for a sign of weakness. A split ensued on the convener's committee over management imposing changes to the tea break and an opportunity to resist management by command through industrial action was lost. Workplace conveners lost further credibility over wage bargaining. After being told that profits were well down and that several payment milestones had slipped causing cash flow problems the unions agreed to a six month pay freeze. Initially, the conveners were worried how the members might take such a request.

> I can remember the meeting very well. We were very jittery that it might cause all sorts of problems. We had the mass meetings and the membership responded, to what was a crisis, magnificently. Ninety-eight per cent of people voted yes. And then the company shit on them. To all intents and purposes this was no lie by the company. They were hemorrhaging, profits were less than they said and obviously you need companies to make profits to take money off them to get pay rises: you can't get a pay rise if you're making a loss. We had a position of trust between our members and us and, more importantly, between the membership and the company. From then on it went steadily down hill where it was seen by the members that the company were out to screw them for every fucking penny they could.

Dockyard workers were told that the freeze was a one-off emergency and that there would be an 'equality of sacrifice'. Management, according to a convener,

> started to do all sorts of silly things. They tried to get through impossible things like cutting overtime rates and cutting the dayshift [rate] out, all sorts of things like that. The next year [after the pay freeze] the Managing Director, of course, got £68,000, a £68,000 bonus the next year. They tried to give us an ex gratia payment instead of a good pay increase after what we done the previous year for them. They've destroyed basically the trust the workforce had in the Babcock management and they lost the confidence of the local conveners.

Not only did the conveners lose face with the members but, with the help of management, the old dependency on national officials returned to haunt them.

> A classic example came this year [1995] when general pay movements across yards in Britain were less than 3 per cent and we managed to get a 3.2 per cent increase with no strings attached. Rejected by the membership, eventually carried by national officers. Not 3.2, they got 3.4%. But you're talking about pennies. The previous year they had not given the

> conveners the maximum, they gave it to national officers. And the membership aren't daft, they saw that. We said to them this year, 'You better make sure you don't do that to us again. You better make sure that you offer us the vast majority of the money. If you want local negotiations then that's the way you've got to do it'. They not only increased the offer for national officers, they also increased it for local officers. It showed in the vote. The first vote was 40 against. The second vote, for the increase from 3.2 to 3.4, was something like 300 for. If somebody can work out why a 3.2 with no strings got 40 against and the 3.4 offer got 300 for, if you can tell me the logic of that, fine. My view was they didn't believe the conveners when they said that there wasn't any more [money] and they were proved right. They didn't believe the local officers. When it went to national level they put [the date for the annual rise] back to 27 May [from June], a small move but nonetheless an improvement. This is 95, it happened in 94, same as 93.

The conveners standing with their own members was badly undermined.

> And from that day on we've never got a pay deal through. We've had pay deals but as conveners we've never got a pay deal through. And its never been carried through by the local officers either. Its always been national officers. Its actually gone back full circle to the STJC if you like.

A tension exists as Babcock prepare to run employment levels down in future years. Babcock bought the assets of the dockyard from the MOD in 1997, in a deal negotiated with MOD which gave Babcock public funding to buy-out the relatively generous redundancy terms of dockyard workers in return for a one-off payment. As guaranteed naval work tapers away and becomes open increasingly to competitive tender employment relations will be put under further strain. Workplace unionism is intact at Rosyth and has limited the scope of the restructuring process thus far. However, local disunity and national interference present major hurdles for local trade unionists in resisting a renewed management offensive and restoring credibility in the eyes of their constituencies as the ultimate arbiters of workplace-based bargaining. The final chapters try to interpret the contradictions of restructuring and worker organisation is examined in more detail in the Chapter 13.

Chapter 7

Ferranti in Scotland

In the forty years after World War Two, the defence electronics company, Ferranti, grew to become one of the most important firms in Scotland. From inauspicious beginnings, the Scottish Group became central to the fortunes of the whole Ferranti group in terms of profits and turnover, while in Scotland the group became the biggest manufacturing employer and was one of the few firms operating at the leading edge of a number of technologies. Ferranti managers also became part and parcel of Scotland's institutional set up, playing influential roles in the main industrial and policy bodies. The account outlined here charts the rise of Ferranti in Scotland as closely bound up with its successful entry and ongoing presence in defence electronics markets. In many ways this is unusual. Most defence electronics companies are concentrated in a few core areas in the south and west of England, close to government research centres (Saxenian, 1989; Hall et al, 1987). At the outset, the nature of defence electronics as a special field of activity will be established.

Electronics is central to any state with pretensions of military power. But while civil electronics has dispersed production globally and lowered unit costs, military electronics retains a national character as a technological capability deemed strategic to state power. This is part of the necessary background for understanding Ferranti's development in Scotland over the past fifty years. Ferranti's arrival and post-war survival in Scotland is in some ways an exceptional development in Britain's defence electronics industry. Two main themes can be detected - unceasing expansion and intermittent crises. The crisis of the 1970s had two significant outcomes: government bail-out and the rise of white collar trade unionism. Here the peculiar character of the Ferranti firm as a family business run by engineers in an age dominated by the rise of the professional manager and the separation of ownership from control is important. Some discussion will be offered of one classic account of this from the early 1960s, Burns and Stalker, who also made a Ferranti case study central to their analysis. Finally, an account will be given of the Conservative government's transfer of Ferranti back into private hands in 1980, which may have been the last hurrah for the Scottish institutions' ability to mobilise to protect Ferranti's operations in Scotland.

Ferranti in Scotland

Burns and Stalker's (1961:58) study of the industrial uses of science in peacetime paints a picture of less stable market conditions than is generally found in later accounts of Cold War arms production. Undertaken following the 1957 defence cuts, the study found that 'mature' electronics firms were beset by a range of anxieties brought on by the vicissitudes of military demands. The difficulties firms faced can be listed thus: apprehension about the future volume of government development contracts; relatively low profit margins on development contracts; uncertainty over the eventual allocation of production contracts; the problems caused by discontinuities in personnel at the defence ministries; the suspicion of unwarranted technological elaboration by technical officers to justify their positions; a noticeable decline in technical expertise in the military research establishments (MREs); and, in a familiar refrain, technical ideas were 'virtually sterile' for generating commercial applications. Against this, all the firms in their study had a 'good deal' of government work, although some claimed that this was 'a form of insurance against a shutdown which a 'national emergency' might otherwise force on them'. Government work also attracted good engineers. An additional factor for taking on defence orders was that technological innovation *might* become a source of new products should the main civil markets become too unstable, threatening future growth.

It is within this uncertain post-war situation that the exceptional role of Ferranti in surviving as an advanced military electronics firm in Scotland needs to be considered. To grasp just how disadvantaged Edinburgh was as a site for high level military electronics a good starting point is Hall et al's (1987) study of the cumulative advantages of place for the Western Crescent, spreading out from Greater London, Cambridge and Bristol. where virtually the entire post-war industry became clustered. The main advantages favouring the Western Crescent were: first, 'locational displacement', involving the outward movement of an existing high tech sector in London spawning new firm formation; second, proximity to publicly-organised research, in particular the defence research establishments; third, the importance of intense socio-cultural, face-to-face contacts in the defence procurement process, for electronics what Saxenian (1989: 460-1) called the 'cosy boys' of the exclusive 'CVD club'[1]; fourthly, the agglomeration economies created by indigenous national processes which attracted and, in turn, sustained

[1] Dickson, (1983) outlines the 'sycophantic' nature of relations between a small number of military eletronic firms, including GEC and Ferranti,the MREs and the Departmental body set up to support R&D in electronics for military reasons. This body, CVD, 'Drectorate - Components, Valves and Devices', dominated the direction of electronic R&D in the UK for much of the post-war period to the neglect of civil commercial electronics.

high level multinational activities; fifth, national transport policies, especially, the establishment of Heathrow airport in the 1940s, the M4 London-South Wales motorway in the 1960s, and the first Inter-City railway line on this route in the 1970s, taken in combination had favourable unintended outcomes; sixth, land use planning, in the combination of fostering growth through strategic planning and the rural restraint of green belt planning, paradoxically had the benignly perverse effect of attracting incoming high-level labour and firms. In summary, the location of high tech activities in the western Corridor was the uncoordinated result of a complex of factors, underpinned by unique public policy decisions both in terms of the *physical* infrastructure and the *knowledge* superstructure, with its pivot in the MREs. Ferranti in Edinburgh had none of these mutually reinforcing locational prerequisites for concentrated high tech activity which so favoured the M4 Corridor; indeed the absence of these factors is what makes Ferranti's case so exceptional.

Wartime roots of Ferranti in Scotland

In 1942 the Ministry of Aircraft Production (MAP) approached the Ferranti Instrument Department at Hollinwood with proposals to finalise the design, improve the mechanical construction and prepare drawings with the Royal Aircraft Establishment at Farnborough in the final development of new gyroscopic gun sights (GGSs). The 13,000 workers and the existing Ferranti capacity in Lancashire were already fully occupied on war work. In light of the capacity problem, the Works Manager of the Instrument Department, Eric Grundy, had decided that Edinburgh, with its availability of workers, space and relative safety from aerial attack, would make a suitable location.[2]

After an aborted attempt to occupy a Ministry of Supply building at the former Portobello skating rink, and a period when dance halls, garages and boot factories were briefly considered, Sir Stafford Cripps at MAP gave permission for a new factory dedicated to GGS production to be built. John Toothill, who had been appointed Manager of the Edinburgh project, laid out the plans for a building at Crewe Toll on Ferry Road, including workshops, offices and canteens. Building work and labour recruitment both started in February 1943. From being a greenfield site, a factory consisting of 100,000 square feet was opened after only eighteen weeks, at a cost £111,000, and delivered the first four Mk.II GGSs in December

[2] Although Toothill claims that it was MAP who advocated a move to Scotland (in Burns and Stalker, 1961:53).

(Ferranti, 1993:5). Toothill (in Burns and Stalker, 1961:53) described how the labour force for Edinburgh was assembled:

> Technical staff, production engineers, and foremen who had experience of this small and intricate type of production were transferred from our parent factories in Lancashire, 40 men were taken from the Ministry of Labour Training Centres and sent down to Lancashire for two months' training as machine setters. the rest of the labour, up to a peak of approximately 1,000 people, was recruited locally.

Employment at Crewe Toll rose from 110 in June 1943, 740 in June 1944 to 950 in December 1944, and 9,594 GGSs were manufactured, at a value of £.75 million. With the end of the war large scale demand for GGSs dried up. The problem for Ferranti was that there was no pre-war product to which it could return to manufacturing. As Toothill put it: 'We had built up a good works organisation on fairly accurate instrument production. We had a small design staff and too highly specialised-we were a body with a tiny head and we had no future unless we could design equipment for which there was a demand' (in Burns and Stalker, 1961:54).

The 1950s: a remote military electronics firm

The immediate post-war objective for Toothill was to keep Ferranti viable in Edinburgh. This required first of all, to secure a commitment to Edinburgh from the company, second, to find work from somewhere, and, crucially, to grow a 'design head' appropriate to the 'production body'. Sir Vincent de Ferranti agreed to retain the Edinburgh factory on the condition that it paid its own way and efforts were made to break into what was seen as a potentially expanding electronics market. In the immediate post-war years between 1945 and 1949, a diverse range of work was taken on, including the manufacture of cooker switches, broken thread recorders for the textile industry, X-ray medical equipment, surgical knives, a sea swell recorder, transformers for deaf aids and in collaboration with Enid Blyton, a 'Mini Cine' slide projector for children. Toothill later claimed that the attempt to base production on such a diverse range of products 'proved a big mistake' (in Burns and Stalker, 1961:54).

At the same time, the first steps were taken to create a design team for electronic devices, recruiting a senior engineer from Manchester and setting up in 1947 a laboratory to take over Ferranti's radar interests. This was further enhanced by the transfer to Edinburgh of company physicists working on specialised radio valves. By 1948 the workforce in Edinburgh totalled 538, with 187 engaged in R&D, 221 in production and 175 in purchasing, administration and

maintenance, a reflection of how far the 'head' had grown, with serious research being done into microwave components and radar magnetrons and klystrons.

Where spatial distance from the Military Research Establishments (MREs) and the Western Crescent might have prevented Ferranti in Edinburgh from developing close collaboration with government engineers and designers, Ferranti needed to create its own knowledge superstructure. The formation of a design 'head' closely followed the method used for setting-up the wartime production 'body' - appropriate kinds of labour were configured in Edinburgh by simply importing them. Toothill adopted a policy of what might be called 'knowledge substitution' and simply attracted key technologists to Ferranti's Scottish base as the means of overcoming remote location disadvantages. Such personnel had the twin benefits of continuing to be part of an extended technological community and privy to 'insider' special knowledge about other engineers, departmental politics, innovations and projects, and also helped to generate an alternative centre of design activity, mentoring a new community in a seemingly remote and technologically barren location.

The first real breakthrough in getting work for Edinburgh came in 1949 when Ferranti, in collaboration with Sir Robert Watson-Watt, were awarded a £500,000 development contract for 1,000 MHz Distance Measuring Equipment for the new de Havilland Comet civil airliner. This award put Edinburgh at the cutting edge of a new technology, albeit for the civil aviation market, and was made possible because of the existence of the radar team in Edinburgh which had been formed from the nucleus of engineers recruited from the MREs.

Yet the main focus of Ferranti's strategy was for a major return to defence production. Ferranti had continued small scale production of GGSs after the war and in 1949 recruited Mallinson Powley from the Royal Aircraft Establishment, who had been deeply involved in the study and development of the GGS MkV, now being produced in Edinburgh. It was also becoming evident that the instruments and electronics in miliatry aviation were increasing in complexity because of the performance demands on jet aircraft and that military markets were on the verge of expansion. Ferranti made a conscious effort to position themselves as a strategic part of the emerging military-industrial complex. In Toothill's words:

> We decided therefore to take on a nucleus of engineers from the Government establishments in order that we should have a sound knowledge of operational problems,

> and so that we could educate our existing and new design staff. We wanted to be in a position to take on a defence problem from the initial requirements through flight trial stages to final production, instead of only engineering and production. (in Burns and Stalker, 1961:54).

The intention was clearly to resist becoming a production branch plant pure and simple and to take on the attributes of a horizontally integrated firm covering a comprehensive range of functions from conception to execution. The Ferranti management hoped to become technologically indispensable to the Services. The advent of the Cold War and the build up to the Korean war apparently signalled the correctness of this as a growth path. Although GGS remained Ferranti's core product they were moving into a range of technologically advanced areas, involving both naval and air technologies. By the early 1950s, Ferranti was designing and manufacturing ten per cent of total government demand for electronic valves and, at the prompting of the Admiralty, opened a valve research and design facility at Granton and a factory at Dundee for production. The Admiralty was also responsible for involving the Radar Division at Crewe Toll in designing and building the ship-borne radar, Type 963, code-named Notorious, one of the biggest radar projects that the company was associated with. Even this was eclipsed when the US Navy ordered radar equipment to the value of $4 million in 1954/5.

What proved critical to the maintenance of the Ferranti set-up in Scotland, however, was the role of the post-war institutional apparatus, at both the UK and Scottish levels. In 1948, the Scottish Council, in consultation with Toothill, approached the Ministry of Supply to make a case for establishing an electronics research centre in Scotland. This was a break with the pre-war and even wartime location of high level activities and fitted the policy climate perfectly. As one report noted: 'At no time did the Council encounter entrenched opposition at the Ministry to their suggestion. The obstacle facing them was rather inertia or that the Ministry officials had never thought about establishing a new electronics research centre anywhere else than fairly far south in England' (*Scotsman*, 12 October 1954). The MoS agreed to fund a new 80,000 square feet laboratory opposite the existing factory at Crewe Toll. The same article had high hopes for the new scheme when the new lab opened in 1954. Under the banner headline:

FERRANTI LABORATORY WILL BE THE BASE OF A MAJOR INDUSTRY

A triumph for the Scottish Council

the article breathlessly announced: 'As it proceeds it will grow into one of the greatest co-operative ventures seen in Scotland with Government Departments, Scottish firms, universities, and technical colleges as the main partners working together to found a major new industry which will give scope to more Scottish scientists and engineers to work in their native land instead of having to seek careers elsewhere'. This became the Scottish Council's Electronics Scheme and put Ferranti firmly at the centre of the industrial and political network in Scotland.

Ferranti created its own physical infrastructure, through a perpetual process of expansion in Scotland. The company now had two aircraft based at Turnhouse on loan from the Ministry of Supply which uniquely allowed it to set up the Trials and Installation Division (TID) to flight test equipment under development. Permanent facilities were opened in 1956, to allow the servicing of the fleet, which had grown to nine aircraft. The Ferranti Flying Unit (FFU) at Turnhouse provided important knowledge about the design, development and production of major airborne systems. As well as product innovation, Ferranti also made inroads in process innovation partly as a result of limits on the availability of existing space. Improved production techniques and the development of Ferranti's own computer-controlled machine tools reduced manufacturing times, with Ferranti claiming that production at Crewe Toll rose by 40 per cent between 1952 and 1953 (Ferranti, 1993:13-15).

A project like the Airborne Interceptor Radar and Pilot Attack Sight System (AIRPASS), or A123, illustrates the comprehensive in-house philosophy of Ferranti. The radar design team were at work on the project before the aircraft had even been named (Lightning) in 1953, the development work was undertaken at Crewe Toll during 1955, the advanced prototype was fitted into the nose of Dakota used for flight testing at the FFUs hangar at Turnhouse the same year, the production contract was allocated to Ferranti in 1957, and AIRPASS finally entered RAF service in the Lightning in 1960.

By the early 1950s Toothill's strategy had clearly begun to pay dividends, as an ever-expanding Ferranti assumed the position of one of the most important firms in Scotland. This significance was not only technological but also in terms of employment and in its political standing. By 1952, it had a turnover of more than £2 million, was the largest employer in the electrical industry in Scotland, with a clear bias towards technical labour, and was the second biggest industrial employer in Edinburgh (Ferranti,1993:13). In ten years, Ferranti had gone

from just over 500 workers in Scotland in 1948 to 3,200 in 1959, with the workforce doubling between 1947 and 1949, again between 1949 and 1951, during the Korean war rearmament, and virtually doubled again between 1957 and 1961, as Table 7.1 indicates. The sites at Crewe Toll, Dundee, Granton and the FFU base at Turnhouse were added to by the opening of facilities at Muirhouse, which included a Film and Printing Unit as part of TID, and an after-sales Services Department, which included a training school for customers and the publishing of technical manuals. A 17,400 feet extension to the MoS lab was commissioned in 1958. This was one of the first buildings in Britain designed with fully air-conditioned, humidity and temperature controlled clean rooms and anti-vibration facilities, to meet the new levels of precision and fine tolerances in manufacturing technically-exacting products like the new inertial guidance systems. Ferranti also expanded its apprentice training organisation, based in three former Edinburgh Corporation schools, which was divided into Craft, Technician and Student grades of apprentice and further subdivided into mechanical and electrical disciplines.

By any account Ferranti's growth as a leading defence electronics firm, located in a technologically peripheral region, is striking. As in-service equipment became proven, Ferranti acquired a formidable technical reputation and the ten years of expansion in the 1950s seemed set to continue for the foreseeable future. Even its 'civil' projects seemed to be following an upward trajectory. In 1961 insufficient space existed for the expanding production of numerically controlled machinery and a 70,000 square feet factory was built at Dalkeith, twelve miles outside Edinburgh.

The 1960s: Profit scandals and cancellations

Continuing expansion and the growing range of activities, however, masked certain underlying difficulties for a medium-sized company in a peripheral region trying to remain at the cutting edge of military electronics. Two projects in particular illustrate different aspects of the problems in keeping faith with defence electronics: the radar for TSR-2 and the Bloodhound guided missile.

Ferranti undertook considerable development work on a target illumination radar in the mid-1950s. As Indigo Corkscrew or Type 86, this radar was designed for integration into Bloodhound, which was being developed by the parent company in co-operation with Bristol Aircraft Ltd. In 1961 further orders for Bloodhound were announced from Sweden, worth £17 million, and Switzerland, worth £25 million, and at the AGM that year Sir Vincent de Ferranti

'paid tribute to the ingenuity and effort of the scientists and technicians involved in the development of this complex weapons system' (*The Guardian*, 1964; Ferranti, 1993:24). While the system may have been technically 'ingenious', the same could also be said for Ferranti's ability for profit-making. When the scale of Ferranti's profits from the Bloodhound contract emerged they were accused of being 'excessive' and scandalised the defence procurement process.

Interestingly, the charge of excessive profits did not arise from the system of cost plus contracting, widely held to have 'feather-bedded' the arms industry throughout the Cold War. While cost plus operated for the development part of the contract, for production fixed price contracts were introduced to ensure efficient performance in executing the work and that the contractor would carry all the risks (Kennedy, 1983:173). In fixed price contracts all the costs are agreed, including a profit margin based on a percentage of the capital employed-usually 7.5 per cent-with an extra margin if risk and efficiency issues are involved. The assumption here is that knowledge of the full costs of production is shared by both sides before production actually occurs. Firms involved in fixed price orders attempt to 'beat the contract' either through increased productivity beyond Ministry expectations, thus saving on labour and overhead costs, or by getting Ministry inspectors to accept artificially inflated cost figures in the original drawing up of the contract.

In the case of Bloodhound, an agreed profit of £810,353 on an £8.5 million contract had been negotiated with the Ministry of Aviation after a team of Ministry technical cost officers had spent over 1,000 man hours estimating the labour component of the contract. In the event Ferranti made £5,772,964, a return of at least 82 per cent on capital employed (Fay, 1964b; *The Guardian*, 1964). After an investigation, the Lang Committee found that:

> ... the firm knew when it quoted and agreed prices that unless extremely grave difficulties occurred later in production these prices would yield a profit of the order of that eventually secured, and, *by its silence, it misled the Ministry into thinking that the price contained provision for only a fair and reasonable profit* (although not necessarily 7 per cent on cost). (quoted in *The Guardian*, 1964, my emphasis).

Sebastian de Ferranti complained that the company had not been given credit for 'the undoubted efficiency with which we performed these Bloodhound contracts' (in *The Guardian*, 1964) and Basil complained, 'If there were more Ferrantis around the country there would be a

few more missiles delivered on time [sic] which also had export potential' (in Fay, 1964a). Ferranti eventually offered to repay £4,250,000 in return for a government promise that it would not be discriminated against for future defence contracts.

The concern about future orders was well placed. Another source of anxiety for military electronics, and aerospace industries in general, was that the trend towards the increasing capital-intensity of modern warfare was accompanied by exorbitant cost inflation of equipment. It was hoped that one way for a medium-sized state like Britain to afford to stay in the technological arms race was to have weapons equipment perform more than one role. The idea of multi-role weapons particularly applied to aircraft, which suffered both from acute cost inflation and rapid technological obsolescence. Yet this solution masked a general problem with multi-role aircraft, indeed with any multi-purpose machine, as Smith (1980:133) points out: 'they tend to do each task less efficiently than aircraft specialised for that task'.

In the aftermath of the 1957 Sandys defence cuts, it seemed to make financial and operational sense to develop a replacement plane which could combine the roles of the Valiant bomber and the Canberra fighter bomber (Hastings, 1966). The TSR-2 strike and reconnaissance aircraft was to combine an ability to fly at high speeds and high altitudes for long range missions east of Suez and to fly at low speeds and low altitudes for the European theatre. In response, the British aircraft industry was transformed from a large number of small to medium companies to a handful of larger manufacturers through a series of major mergers in anticipation of the expected benefits of co-ordination and economies of scale for military projects. In 1946 there had been 23 airframe companies and nine major aeroengine firms; by the 1970 there were six airframe and one aeroengine companies (Wood, 1975). Two main UK aircraft companies, British Aircraft Corporation (BAC) and Hawker-Siddley, emerged out of this process of centralisation as powerful and influential interests (Edgerton, 1991).

Work began on TSR-2 in 1959, but by 1962 the Treasury was already deeply concerned about the escalating costs and slow progress; by 1964 the original estimate of the cost of TSR-2 had tripled to £750 million and the project was at least two years behind schedule, according to Denis Healey, then Labour Defence Minister (1989:273). Healey had inherited the project from the previous Conservative administration and it had become the subject of considerable political controversy (Law and Callon, 1992). The Labour Party had opposed 'prestige projects' such as Concorde and TSR-2 while in opposition and eventually cancelled it

in 1965. Fifty replacement American FB-111A fighter bombers were ordered at £380 million each. Healey claimed that the FB-111A would save the Chancellor £250 million over ten years. These were also cancelled three years later and US Phantoms ordered instead.

Since virtually the entire UK aircraft industry had a stake in the project and knowing the fierce nationalist anguish cancellation would cause, the Cabinet were hesitant about making a public announcement. The decision was deferred from February until April, when it was 'smuggled into the Chancellor's budget speech', at a further cost of £1 million a week for keeping development work ongoing (Healey, 1989:273). Despite the accumulation of data from successful test flights, the government ordered all aircraft on the line to be scrapped and the tool jigs to be destroyed, which was soon followed by over 8,000 redundancies in the industry (Gardner, 1981:113, 118).

Healey's figures were vigorously challenged by industry, who blamed Treasury opposition to the project for the cancellation (Gardner, 1981:106-120). Cancellation resulted in the inevitable cries of betrayal across the British defence industry (see Wood, 1975). For some this was further evidence of British technological and industrial decline, coming after the cancellation of Blue Steak missile project in 1960, the US Skybolt replacement in 1962, and the recommendation by the government inquiry into the British aircraft industry, the Plowden Report, the same year as the scrapping of TSR-2, recommending that advanced military aircraft should be met directly from US sources. As one defender of the industry recently argued,

> This 1965 decision, which resulted in a furore of unprecedented proportions, has been described as a massive blow struck at the British aircraft industry. But it was really a coup de grace because the main damage had already been done in the nineteen fifties (Sherwood, 1989:17).

Sherwood and Wood both blame the 'decision makers', politicians and civil servants, for the spate of cancellations. Industry blamed Mountbatten for the fate of TSR-2, because he wanted the RAF to share the costs of developing the Navy's Buccaneer (Gardner, 1981:106-7), while Healey argues that the fault lay in British service structures:

> The real tragedy is that the TSR-2 should never have been begun; it would have been possible to develop the naval Buccaneer strike aircraft to meet the RAF's needs much faster and at far less cost. But under conditions of internecine warfare which then ruled

> between the services, the RAF would never accept an aircraft originally designed for the navy ... Indeed Admiral Sir Varyl Begg [Chief of Naval Staff], ... claimed that Mountbatten had allowed the RAF to go ahead with the TSR2 only to compensate them for losing the strategic deterrent to the navy's Polaris submarines - a typical example of 'log-rolling' (1990:274).

Cancellation of TSR-2 dealt a serious blow to Ferranti's confidence and compounded the uncertainty created by Bloodhound. Ferranti had expected to receive major production contracts from the TSR-2 bomber and the P1154 vertical take-off jet fighter, which was also cancelled. Such was the severity of the loss, one estimate put 1000 jobs under threat - mainly technologists and scientists - and raised fears of a 'brain drain' from Scotland (*Evening News and Dispatch* 7 April 1965). Ferranti's plans for TSR-2 project were well advanced. Before the Bloodhound scandal broke, Edinburgh had already designed a terrain-following radar for TSR-2. Besides the radar, the Ferranti organisation had significant interests in TSR-2 including map displays, the airstream direction detector, the inertial navigation platform and aircraft instruments. The radar underwent airborne trials by the FFU at Turnhouse and a customised Environmental Test Laboratory was built at Silverknowes to enable 24-hour reliability testing in realistic conditions. Around 80 per cent of TSR-2's electronics had been developed by the time of cancellation and the flight trials of the radar yielded impressive results about its capabilities. Indeed one interviewee, who worked on the forward looking radar, suggests that as the last fully nationally developed aircraft, TSR-2 was 'too advanced for its time'. After cancellation, a number of development projects were scaled down and the FFU was 'particularly badly hit' (Ferranti, 1993:29).

Although the loss of TSR-2 work was a 'major blow' to Edinburgh, it was partly offset by the procurement of electronic work for maintaining and modifying the 300 US Phantom bombers bought for the RAF and the Navy. Ever sensitive to political, industrial and service pressure about national prestige and capabilities, the Phantoms had to be 'Britishized'. The appeasement of the military-industrial nexus was much to Healey's chagrin:

> Unfortunately, the Cabinet's insistence on putting a British engine and avionics into the Phantom fighter meant the each of these aircraft cost twice as much as it would have cost if we had bought the American model off the shelf ... (1990:272).

The initial £1.75 million contract for the 'Britishization' of the Phantoms allowed Ferranti some consolation after the TSR-2 blow to the Scottish Group and returned employment to an 'all square' position (*Evening News and Dispatch* 10 December 1965).

Business as usual

Who or whatever was to blame for the cancellation, the operational requirements which TSR-2 was designed to meet continued to be pursued. This meant that the problem of matching desired weapon capabilities to resources persisted. Even after the cancellation of the FB-111A and the abandonment of the east of Suez policy in 1968, Britain remained attached to a multi-role combat aircraft. The government knew that it could not afford such a project by itself but Wilson had been stung by De Gaulle's charge that Britain were becoming a satellite of and over-dependent on America technology after the TSR-2 cancellation (Wilson, 1974:129). The solution lay in the formation of transnational alliances with other European states and industries with a similar penchant for prestigious multi-role projects. BAC joined with Dassault of France to develop the Anglo-French Variable Geometry multi-role aircraft until Dassault withdrew in 1967. BAC persevered for another year but could not involve new collaborators in the project. Fortunately for the aircraft industry in Britain, a multinational multi-role combat aircraft, Tornado, was proposed following the setting-up of the European Panavia consortium in 1969, comprising BAC of the UK, MBB of West Germany and Fiat of Italy.

Table 7.1: Employment numbers for Ferranti Scotland, 1943 to 1965

1943	1945	1947	1949	1951	1953	1955	1957	1959	1961	1963	1965
0	500	300	800	1500	1800	2100	2300	2800	4500	5200	5400

Source: Ferranti (1966:5)

As the military aircraft industry revived under the promise of Tornado, Ferranti recovered strongly. The workforce had also grown by 500 to 5900 in the past year. As Table 7.1 indicates, since the low point of 1947 when employment numbers fell to 300, Ferranti's workforce had doubled three times between 1947 and 1949, 1949 and 1951 and 1957 and 1961. Table 7.2 shows that Ferranti occupied 12 separate worksites. Yet even then Ferranti were running out of space and people to sustain expansion. Ferranti's stress on technological innovation is indicated by Table 7.3, with more than one-third of total floorspace given over to

R&D. Despite the cancellation of the TSR-2, at the annual Christmas luncheon in 1966 Toothill announced record orders of £26 million, enough work to last until 1969 even if no other orders were won. The main problem, Toothill complained, was a lack of space and skilled labour, 'To sum up the position, I would say that we have too much work, too little space and too few people' (*Scotsman*, 20 December 1966). Toothill claimed that Edinburgh had to turn away £3 million worth of dollar exports during the year because of the lack of skilled labour (*Evening News and Dispatch* 18 November 1966). A major problem was the loss of skilled workers as new plants opened up in development areas. A large number of toolmakers had left Ferranti, for instance, to work at BMC in Bathgate since it opened in 1961 (*Scotsman* 17 November 1966). In desperation, Ferranti offered to take on some of the 200 skilled and technical workers from a closing electronics factory in Hillington, but the problem was one of getting housing for the workers. The following year the labour shortage continued, with the firm estimating that four out of every five workers trained by Ferranti move to or get poached by other firms or emigrate. Despite these problems, the firm still managed to recruit a further 700 workers by the end of the year (*Evening News and Dispatch* 14 April 1967; 25 December 1967).

Table 7.3: Floor space use of Ferranti Scotland, 1966 (square feet)

Production	385,000
Research and development	253,000
Services	35,000
Administration	17,782

Source: Ferranti (1966:5)

Table 7.4: Ferranti workforce composition according to occupation and sex, 1966

Qualified Scientists and Engineers	345
Draughtsmen	290
Skilled Males	1,263
Semi-skilled and Unskilled Males	1,503
Females: Clerical and Production	1,410
Apprentices	650
Total	5,461

Source: Ferranti (1966:5)

Table 7.2: Sites and factory space occupied by Ferranti in Scotland in 1966

Site	Year occupied	Floorspace (square feet)
Crewe Toll		
Original factory	1943	216,282
Main Laboratory	1954	64,105
New Wing	1959	17,400
Silverknowes		
Laboratory Block	1961	31,396
Extension	1964	45,784
Dalkeith		
Factory	1963	90,000
Auxiliary premises	1961	12,042
Dundee	1952	51,715
Edinburgh research lab	1953	24,516
Turnhouse		
Flight trials	1956	98,963
Environmental Test	1951	7,187
Alnwickhill Radar site	no date	4,778
Apprentice Training		
Dean School	no date	9,851
Couper St School	no date	7,589
Muirhouse Mansion	1957	8,805
Craigroyston House	no date	9,369
	Total	692,595

Sources: Ferranti (1966:2-4); Ferranti (1993).

By 1968 Ferranti had become the biggest single employer in Scotland, with a workforce of 6,600 and a turnover of £16 million, although this dropped to 5,300 workers and an order book of £23 million in 1972 (Ferranti, 1993:34, 38). As Table 7.4 shows women comprised around one quarter of the workforce at this time, the second biggest category if production and clerical activities are collapsed together. Only qualified scientists and engineers and apprentices are not denoted by gender, although it is reasonable to assume that since these categories did not need to be gendered, women were unrepresented in them. Job definitions also obscured heavily gendered occupations. For instance, one woman who worked at Ferranti in the mid-1960s recalls that while tele-printer operators were women computer operators were always men, even though the actual skills employed in feeding in information were quite similar in nature (Interview). An article appearing in the local newspaper (*Evening News*, 22

October 1969) on women workers in the clean room at Robertson Avenue gives some idea of the position of women workers in the late 1960s. Ferranti was viewed as one of the best paid local workplaces for women workers. No special qualifications were required for entry, although the women must be between 16 and 45 years old and have a 'light touch'. The supervisor, Joan McCue, commented, 'We find people who have worked with hair or flowers are very good at this type of job'. The basis of the work was soldering intricate components. The women sat an aptitude test, which was followed by a six week training and probationary period. The training course started every seven weeks, indicating the constant recruitment (and turnover) of female labour. Concentrated in routine activities, women had few avenues of promotion. They could become trainee leading hands and, then, leading hands or supervisors, in charge of the line. Yet this appears to have been as much a social and counselling role as a command function. One leading hand, Madge Pae, explained her responsibilities, 'As a leading hand I am approached by the girls with problems, whether personal or to do with work, and I have to decide whether it is something I can deal with, or whether it should go to personnel or the foreman. This makes life very interesting'. Thus the workforce was rigidly segregated by sex according to the type of work and position in the command hierarchy. Only later would a few women rise to the higher echelons of the hierarchy, and these cases would be mainly restricted to the Personnel Department (Interview). The amount of service women accumulated was also much less than men. Thus, in 1979 when the qualifying criterion for the long service gold watch was reduced for men from forty to thirty years, bringing it into line with women, only two women were among the 121 awards made that year (*Evening News* 18 April 1979). And this was in a workplace where service was a matter of pride and status, made possible by over four decades of almost unbroken expansion and continuity of employment.

The 1973 Christmas message from the General Manager, McCallum, announced that employment had started growing again, with 300 taken on in the past year and that the order book was 'bulging' with a 'very good spread of work' (*Evening News* 21 December 1973). Multi-million pound export orders were even being received for the Bloodhound missile from Libya, later cancelled, with a third of turnover accounted for by exports in 1972. New military avionics projects, which were to become Ferranti mainstays in the future, were being developed, including an airborne laser ranging device, Laser Ranger and Marked Target Seeker, and display equipment, the Universal Head Down Display.

All this activity was bolstered by the prospect of the substantial orders which were expected to be generated for the proposed new European collaborative multi-role combat aircraft (MRCA), Tornado. This was to be the largest military aircraft production programme since 1945, surpassing even Concorde in size and cost, with the avionics systems comprising some thirty per cent of total costs (*Evening News* 10 March 1973). As the company history puts it:

> The aircraft required a wide range of complex avionics and Ferranti's successes with airborne equipment in the Lightning, Buccaneer, Harrier and Phantom placed the company in a good position to bid for these systems. Radar, moving map displays, lasers and inertial navigation systems were all required for this important and vast project (Ferranti, 1993:38).

Expansion followed anticipation. Ferranti occupied the former McVitie & Price biscuit works, a 300,000 square foot factory at Robertson Road in Edinburgh. This site housed around 1,000 people in the design, development and manufacture of specialised test equipment, the Service Department and, later, the Electro-optics Division. Yet an editorial in the local newspaper argued that compared with the 1200 jobs lost at Robertson Avenue due to United Biscuits' rationalisation there would still be an overall jobs deficit of 200 for Edinburgh; the reason Ferranti expanded within Edinburgh was because 'the firm did not find it easy to expand in the development areas, which do not have the facilities and amenities for the scientists, engineers and technicians involved' (*Evening News and Dispatch* 21 April 1967).

If the production orders for the MRCA were won it would guarantee employment continuity for 1250 workers in Scotland. It thus came as a bitter disappointment when Ferranti lost out on the bid for the radar for Tornado to Texas Instruments, despite the earlier innovative development of the TSR-2 radar. Other bids for the inertial navigation system, the cockpit displays, the airstream direction detector and the laser rangefinder were successful; taken together this constituted a considerable package of work for the forseeable future. The dip in employment between 1968 and 1970 in Table 7.5 can largely be attributed to the loss of Tornado and mainly consisted of the non-replacement of leavers thus minimising redundancies.

Table 7.5: Employment numbers of Ferranti Scotland, 1966 to 1981

1966	1967	1968	1970	1972	1973	1979	1980	1981
5900	6600	6600	5200	5300	5600	6300	6800	7500

Sources: Newspaper files

Ferranti in Scotland was not totally dependent on Tornado, however, and had attempted to diversify into civil markets. In the 1950s Ferranti had developed computer-controlled machine tools and had been involved in the first transatlantic communications link-up using the satellite Telestar in 1964 because of interest in Ferranti microwave communication technologies. The following gives an indication of the range of other types of military and civil projects Ferranti were working on in 1972 alone:

> Major military projects were[:] the radars in the Lightning and Buccaneer, support for the radar in the Phantom; INAS in the UK Phantom and harrier and in the US Marine Corps AV8A Harrier; inertial guidance packages for the European space programme; airborne and ground-based laser equipment and ISIS gun sights in Canadian and Norwegian F5 aircraft.
>
> Major civil equipments included[:] microwave communication links; power line fault and overload detectors; inspection and measuring machines; precision potentiometers; industrial lasers; microwave components; and small lightweight transformers. (Ferranti, 1993:40)

By broadening their product range, Ferranti wanted to avoid narrow specialisation in defence electronics and the vulnerability to cancelled projects and political interference that this entailed. However, the move to become a large, diversified company in Scotland was to prove illusory and defence electronics was to remain the staple market at the core of Ferranti's operations, despite innovatory developments in a number of civil technologies.

The 1970s: Financial crisis and bail-out

For a long time the private control of a leading electronics firm by the Ferranti family had been viewed as an underlying weakness of the company and of the industry in general. At the time of the Bloodhound scandal one commentator reported:

> As Ferranti see it, the problem is how to finance expensive, nationally invaluable projects [sic] and the long chancy wait before they pay off - 'We always have more ideas than

> cash'. The problem isn't unique: nearly everybody else in electronic capital goods shares it. But the Ferranti family is marching in the vanguard of twentieth century engineering with a financial structure fit for a nineteenth century ironmaster ... As Sir John Toothill ... remarks, 'We don't pay any dividends worth a damn'. The old family firm runs a whopping overdraft and ploughs nearly all the profits right back into its precious home-grown projects. (Heller, 1964)

The family had long been derided for their high-handed, patrician disregard for the way that modern high tech companies were supposed to be managed, particularly during the technocratic white heat of the 1960s. The firm had a history of financial crises and was twice rescued from the hands of the receivers to remain a family firm. Sir Vincent de Ferranti created the Ferranti myth by emphasising the technical basis of the firm over its more vulgar financial basis; 'we are not businessmen, we're engineers; that's the whole point of the thing' he is reputed to have said (Fay, 1964a). Out of the massive profits made between 1957 and 1964 - largely from Bloodhound - £6.7 million from £8.1 million were retained by the business for investment into pioneering military technologies such as defence computers, microcircuitry, radar and inertial guidance, but also for funding substantial loss-making civil technologies like computers and sophisticated machine tool controls (Heller, 1964). As Sebastian argued 'We subsidise bad [projects] with the good ones' (in Fay, 1964b).

It came as little surprise in 1974 then that Ferranti were yet again in serious financial difficulties. Profits had plunged from £2 million to £373,000 on a turnover of £70 million (Ferranti, 1993:42). The severe liquidity problem became urgent when the company exhausted its overdraft limit with the National Westminster Bank. The financial structure of Ferranti was widely blamed for the crisis:

> Ferranti found itself in financial difficulties because the family basis of the holdings restricted the amount of capital that could be raised. *It was essential to have access to capital in order to expand, and it is necessary to expand in order to survive.*
> (Senior manager; my emphasis).

The crisis threatened to bring to a standstill the expansionist strategy of the Scottish Group. The poor productivity of the English Transformer Division based in Manchester was seen as a contributing factor, particularly in Scotland. Scottish management and trade unions, united in their lobbying efforts in London, emphasised that the Scottish group were virtually autonomous, self-reliant and profitable. Both sides wanted a solution which would keep Ferranti independent; if that failed a merger with one of the other big electronic companies

was to be avoided at all costs. The *Scotsman* argued that Ferranti in Scotland 'need not be sucked down in an imposed solution designed to cure the financial problems of the English factories' (17 September 1974). At the time Ferranti's Edinburgh plants had vital defence contracts in hand for Tornado, Jaguar and Nimrod. One senior manager recalled:

> Ferranti Defence Systems was always profitable and we felt 'sick fed up' with the rest of Ferranti taking cash we were making but not putting anything back in themselves. The defence side was subsidising the whole operation. In Scotland, we felt that the good return on capital we were generating was disappearing down some Englishman's throat.

In particular, a GEC take-over was especially feared, with consequences for rationalisation and the transfer of work and devolved expertise from Scotland to centralised plants in England. Political support was promised from all political parties in Scotland for a 'Scottish solution' should Ferranti fail to be kept together as an independent entity on a UK basis. As the convener of the manual shop stewards put it: 'We want the Scottish factories to stand on their own feet' (in *Scotsman*, 17 September 1974). By way of contrast, the white-collar unions at Manchester were demanding that Ferranti be nationalised.

Both the Scottish identity and the self-image of the family firm were important to Ferranti. The management style itself was frequently referred to as 'paternalistic'. By this is meant the deliberate cultivation of a strong set of overlapping identities backed by a reward system to generate a clearly structured sense of company 'belongingness' and affinity. The main emphases here were a series of local commitments to: family, Scotland and technology. One manager drew attention to the disciplining effects of the Ferranti identities:

> The Scottish Group was very important under Ferranti. The Ferranti brothers were keen on both Scottish and Lancashire identities. They believed in a system of nepotism since it would give you two forms of discipline over younger workers: i. the parents and ii. the company.

Another suggested that the sense of family worked not only because of the kinship networks that ran through the firm and the sense of making a valued contribution and personal advancement but because these were made possible by the continuity of employment over many years:

> Workers at Ferranti had a very strong identification with the firm as a 'family' company, in that it was owned by a family and that fathers and sons (and daughters) could be found

> working here. There was also a sense of family because of the security of employment at the time and the feeling of loyalty towards the company, who had given many workers a chance to make it in an advanced engineering sector. People were proud to work for Ferranti and got status and recognition from each other and more widely for the kind of skills they had and work they done.
>
> [Ferranti] was a company whose managers, the vast majority of whom had been apprentices in the company and had come through the structure. It was very much a family-based company ... people still knew Basil [de] Ferranti and Sebastian [de] Ferranti, who regularly visited the operations in Edinburgh.
> (Union convener)

Such an inclusive set-up was also able to withstand periodic shocks of cancellation and financial crisis. A senior trade unionist also detected a similar process in operation,

> Within the workplace, the Ferranti management operated a regime of 'smothering paternalism', which was irregularly modified by external pressures, e.g. financial crisis, Bloodhound, nationalisation, etc. People at Ferranti had a particular mind-set and strongly identified with the firm, showing pride in the reputation for good engineering. Even now some people still call the place Ferranti.

How deeply the workers bought into the identities on offer is another matter. Certainly, Ferranti's expansion and crises were accompanied by a remarkable period of industrial peace; the first serious industrial action did not occur until 1979, thirty-six years after setting up in Edinburgh. Yet it is not clear whether the family-nation-technology trinity is a cause or a result of industrial peace. Sometimes the paternalism and localism of Ferranti was felt to be too claustrophobic and parochial and could not offset the material advantages in wage levels being offered elsewhere for highly qualified engineers. Hence, the permanent problems posed by labour turnover were left unresolved, although an 'open door' policy was adopted which kept vacated posts open for workers who might want to return to the company in the future. Even long-serving Ferranti engineers are prepared to point to a down-side in the occupational costs of Ferranti's technology-centredness and poke fun at their inflated self-image:

> It is sometimes said that alternative employers viewed workers with thirty years at Ferranti as 'institutionalised'. This means that they have acquired certain habits and ways of working over the years, especially in the defence sector, which may be not so adaptable for other environments. Ferranti, for instance, used to have a marketing slogan playing up a picture of being at the cutting edge of technological excellence: 'First into the Future', to which we always used to say, 'Aye, and Last out of the Past".

Both the family and Scottish identities were also overlaid in Edinburgh by site specific rivalries:

> Over the years the Scottish Group mushroomed from Crewe Toll to become an important multi-plant firm. Crewe Toll regarded itself as the 'centre of the universe', to the resentment of Silverknowes and Robertson Avenue, since all the top managers and decision makers were based there.

Paradoxically, Ferranti's strengths and weaknesses flowed from the same source - its self-image as a lone island of family ownership and control surrounded by a sea of anonymous corporations run by professional managers. One trade unionist recalls that the firm delayed going public for as long as possible and only did so after internal wrangling within the Ferranti family (Interview). Until then, autocratic control was stubbornly retained by the immediate family. As Sir Vincent de Ferranti put it, 'We're used to having our own way' (quoted by Fay, 1964a). Traditionally, the family had been staunch supporters of the Conservative Party and found the prospect of being bailed out by a Labour government and public interference in their affairs distasteful. Basil de Ferranti had briefly been a Conservative Minister after Macmillan's purge in 1962. He won a by-election for the Conservatives in 1958, and went on to become the Minister of State at the Ministry of Aviation, but was forced to resign three months later because he could not 'satisfactorily dispense with his shares' in Ferranti, who were, of course, a key avionics supplier to the Ministry (Fay, 1964a).[3]

Distasteful or not, discussions with the Labour government resulted in a £15 million cash injection in return for a 50 per cent shareholding in the company and a management reorganisation. This was to be the first opportunity for the Labour government to put its proposals for a National Enterprise Board (NEB) into practice. The main idea behind NEB was that it would act as a catalyst for improving the performance of British industry. The state would buy up profitable areas of manufacturing to improve the poor rates of growth attained by private industry. Then Prime Minister Harold Wilson recounts how the need for such a body was sharpened by the crisis at Ferranti. Although the company 'did not stand high

[3] Basil reportedly began his political career in 1955. One day, while cycling to work he suddenly thought, 'Gosh, wouldn't it be awful if the Socialists got in'. He later became the sole open Conservative critic of the decision to buy Trident and worked at ICT, the computer firm, after Ferranti's computer department merged with them (Fay, 1964a).

in the City: the brilliant Ferranti brothers were regarded as too theoretical and not profit minded enough', Ferranti represented for Wilson 'a spearhead of British industrial innovation' (1979:135-6). As one analyst of the electronics industry put it, 'Unwilling to accept additional unemployment in politically-unruly Scotland on the one hand and disinclined to see a critical defence-electronics firm disappear on the other, the government of the day felt no compunction about its decision to undertake a partial nationalisation of the enterprise' (Todd, 1990:146).

Tony Benn, then Secretary of State for Industry, drew a wider connection between role of the state and capital,

> I suppose this will enable me to hammer home most purposefully the main political lessons: Ferranti subscribes to the Tory Party to get Government out of industry's hair, and then comes round with the begging bowl, when it gets in trouble, for help from a Labour Government. This is the lesson of modern capitalism and the Government policy is highly relevant, while the Opposition are being odiously hypocritical. (1989:225).

The Ferranti family wanted to restrict the degree of state control over the company. According to Benn, '... the Ferranti brothers, or Basil at least, had tried to persuade the unions to agree to just 25 per cent Government holding so that the family interests in the firm could be preserved. In fact, we are going to have to go up to 75 per cent or 85 per cent holding as a result of the need to put in large sums of money and value the share correctly' (Benn, 1989:385). Benn was determined to sideline the Ferranti brothers and refused their request for ten year contracts as Chairman and Deputy Chairman on £25,000 and £20,000 per year (1989:374).

Little wonder then that the trade unions were pleased with the NEB take-over. As Doug Rooney, convener of AUEW shop stewards, put it:

> This is a good agreement. The alternative is redundancies and breakdown of the group. We are satisfied that the Scottish work will go on as before. We have built up over the years a good working relationship with management and there is no doubt it will improve. It has become very close in the past couple of months, and it will continue along these lines (in *Scotsman*, 15 May 1975).

An agreement was made between Benn and the trade unions that some redundancies would be necessary at the Transformer Division, reported to be losing £1 million annually, to make the company viable but that no decision would be made to seperate it from the group without government approval first. Benn praised the Scottish unions:

> I am grateful to the Scottish workers for recognising they should not impose on English workers - in this case the transformer division - the penal sanctions that in the past other governments have applied to unviable Scottish plants. The Scottish workers had not sought to secure their own survival at the expense of workers in other areas.
> (in *Scotsman*, 15 May 1975).

Either Benn was not aware of the 'Scottish solution', which seems unlikely, or he preferred to gloss over it as a way of reconciling the overall interests of the workforce. At least that is what the *Scotsman* editorial argued, 'Mr. Benn's ideas on a transfer of power to the working class, his refusal to countenance the shedding of surplus labour and his low rating of profitability make it unlikely that he would be content with a change of ownership and leave management to make the hybrid a profitable concern' (15 May 1975). In fact, that is exactly what happened.

By 1978 NEB effectively held 62.5 per cent of capital, the sprawling Ferranti organisation was broken into five operating divisions and Derek Alun-Jones had been instated as Managing Director and Chief Executive. Sebastian de Ferranti was allowed to stay on as Chairman. Important orders had been placed with Ferranti since the bail-out, including components for the Tornado radar in 1976 and a production order for the Tornado cockpit display in 1977. Increasing orders put pressure on space at Robertson Avenue and it was decided to build a customised 120,000 square foot complex at South Gyle, on the western outskirts of Edinburgh, to house the Product Support Department. Plans were laid to expand the workforce by 1200 over the following five years. Between 1977 and 1980, Ferranti increased the floor space it occupied in Scotland by over half and one third of Ferranti's £40 million investment was earmarked for Scotland (*Scotsman*, 2 March 1977).

Ferranti had become the fastest growing company in Scotland. By 1979, the company employed 6300 in Scotland, the order book for the Scottish Group of Ferranti was substantial and the expansion in capacity continued unabated. According to the General Manager, Donald McCallum, 'We have a tremendous load of work ahead of us - greater than at any time in the past' (*Evening News*, 7 March 1979). A £1 million extension to the Environmental Test Laboratory was added to Silverknowes, to simulate a range of severe operating conditions. The Communication and Control Group at Silverknowes moved to Bellesk House, Granton in 1979 and soon won an order from Phillips in Holland for the Type 1400 microwave radio

relay system. 25,000 square feet of factory space was also occupied at Bellshill, near Glasgow, to expand test equipment facilities. The South Gyle complex opened in 1980 as the biggest of a number of developments in and around Edinburgh. A new facility was built to house the Receiving Stores and the Sheet Metal Shop at West Shore Road, Granton and a new clean area and conference suite was built at Silverknowes. In 1981 alone £12 million was spent on expansion, the order book was worth £100 million, research into several radar projects was being funded and a further 200 workers were recruited, including 60 graduates (Ferranti, 1993:54).

Further inroads had also been made in a range of civil activities. Although Ferranti's numerical control interests at Dalkeith were sold to Plessey for £2.5 million in 1969, the remaining Information Systems Group (ISG) at Dalkeith won a Queen's Award to Industry in 1972 for its Automatic Draughting Equipment and the Rotating Components Group (RCG) was awarded the British Standards Institution BS 9000 approval, after six years preparation, for the manufacture of precision wirewound potentiometers. Dalkeith also developed a range of garage forecourt equipment, winning an order from the Total Oil Company for £2 million of fuel dispensing equipment (Ferranti, 1993:38, 42, 44). Ferranti Offshore Systems Ltd (FOSL) was formed in 1973 to use company expertise in electronics in the exploration and production of oil reserves opening up in the North Sea, supported by the Product Support Department in Edinburgh. FOSL later set up a joint venture company, TRW Ferranti Subsea Ltd, with TRW of Houston, Texas, to design, develop, manufacture and install undersea production control systems. Two Dalkeith groups, RCG and the Measurement and Inspection Group, were merged into the Industrial Products Group (ISG) in 1976. The reorganisation and change in name reflected a shift in management style from an orientation towards the defence equipment at the main Edinburgh plants to a distinctively commercial undertaking at Dalkeith (*Evening News*, 25 August 1976). In early 1977, ISG merged with the Cetec Corporation of California to form Ferranti Cetec Graphics Ltd, based in Glasgow. Ferranti Cetec, later Ferranti Infographics, had a large and expanding market in both software and hardware for computer graphic cartographic systems, digitisers and plotters, and moved to a new factory with 30,000 square feet of space in Livingston in 1980.

With all this expansion and a return to profitability, the NEB seemed to be vindicated from Conservative charges that it was merely propping up another 'lame duck'. In 1977 profitability rose to £6 million from a turnover of £125 million and rose again to £9.1 million in 1978,

repaying the £6.3 million loan element of the original government bail-out. Ferranti was given a fresh listing in September 1978, in what *The Economist* (9 September 1978) described as 'quite a sexy package' for fund managers and opposed by Benn for the same reason. This reduced the government's holding to the originally intended 50 per cent and netted the NEB £10 million (Wilson, 1979:136,149; Benn, 1990:3). By this time the Scottish Group were contributing more to Ferranti's profitability than any other single division: making up one quarter of total profits in 1976, around £2 million before tax out of nearly £7.5 million, to over one third in 1977 and 1978, just under £3 million out of a total of £8.5 million in 1977 and £4 million out of £11 million profits in 1978 (figures estimated from bar chart in *The Economist,* 9 September 1978). The military contracts won by the Scottish Group underscored the boom in Ferranti's profits in the early 1980s. Between 1980 and 1981, company trading profits grew from £15 million to £20.2 million, of which the Scottish Group's contribution grew from £5.8 million to £11.1 million, over half of total profits, from Scottish Group sales which grew from £73.2 million to £111.4 million (*Scotsman*, 25 June 1981).

The Scottish Group seemed to be going from strength to strength in terms of its range of activities, contribution to profit-making and orders; the Scottish operations were absolutely central to Ferranti's further development. The Scottish Group had grown to become the single biggest division within Ferranti, accounting for 40 per cent of turnover and nearly 60 per cent of trading profits by 1982 (Firn and Roberts, 1984:317). Within Scotland, Ferranti's industrial importance can hardly be exaggerated. By 1981 it employed 7,500 people across ten sites in Edinburgh, Bellshill, Dundee, Aberdeen and Livingston at the leading edge of a range of technologies (Ferranti, 1993:52). One indication of the Scottish Group's technological strength is that over three hundred patents were issued for locally-based inventions between 1946 and 1973. Ferranti's role in defence avionics was officially recognised when the Scottish Group won two Queen's Awards for Industry in 1982 for COMED, the combined map and electronic display, manufactured by the Display group of the Navigations Division.

White collar unionism and a blue collar strike

Yet the expansion and official recognition masked underlying difficulties and simmering discontent. We have already noted the constant problem of labour retention during the 1960s and 1970s expansion. By the late 1970s the problem of holding onto skilled manual workers and certain semi-skilled grades was just as difficult as ever, even in the midst of a severe

contraction in the UK engineering industry, and the 'brain drain' of technicians, draughtsmen, planners, designers and research engineers continued unabated. In 1979, the Senior Personnel Officer, Jean McQugh, even went as far as Australia to conduct a graduate recruitment drive (Ferranti, 1993:49). A scheme was also devised to recruit 30 first year undergraduates each year who had failed courses in engineering and science. The Graduate Training Officer at Ferranti reasoned that for £46 per week the firm got 'an intelligent employee able to fill in for continual vacancies in semi-skilled departments' (*Scotsman* 13 August 1979).

The haemorrhaging of qualified labour was compounded by pay restraints. Because of the NEB share-holding, Ferranti were bound to the Labour government's incomes policy. A mass meeting of 2700 white collar workers in August 1978, were told by TASS officials that in the three years since 1975 staff at Ferranti were being paid 15 to 20 per cent less than those in other comparable firms. A claim to the Fair Wages Tribunal by TASS was supported by the firm. At the Tribunal Ferranti criticised the application of the government pay code to qualified scientists and engineers, arguing,

> The group could expand but this is being limited by a low recruitment level in skilled categories. We also have difficulty in keeping staff. Fifty per cent of the people who train with us leave within five years of completing apprenticeships - generally for better money. More business could be accepted and more unskilled labour employed if we could get more skilled staff. (*Evening News* 2 August 1978;*Glasgow Herald*, 3 August 1978).

A trade union official pleaded that Ferranti should receive special consideration because of its involvement with government projects. The Fair Wages Tribunal eventually awarded the staff an 11 per cent rise (*Glasgow Herald*, 1 September 1978).

While a consequence of government holdings was curbs on pay, it had also been the catalyst for a wave of unionisation among white-collar workers across the Scottish Group. The blue collar workers already operated a closed shop arrangement and had a 'coded relationship with management'. White collar workers were about 50-60 per cent unionised in the Draughtsmen and Technicians Association (DATA), which became part of the left-leaning scientists and engineers section of the Amalgamated Union of Engineering Workers -Technicians and Supervisory Section (AUEW-TASS) and the more moderate Association of Supervisors, Technicians, Managers and Scientists (ASTMS) (Interview). For Benn, the NEB bail-out had

been an opportunity to introduce 'industrial democracy' into Ferranti. He records in his diary entry for 17 September 1974 that,

> ... a huge delegation arrived representing Ferranti workers from all over the UK, led by the CSEU, the STUC and the individual unions and management. They all said much the same thing - even the senior management - namely, that they wanted the company kept in its present form, that they didn't want to see jobs lost, that they rejected a take-over by others (in their minds was a Weinstock take-over), and they wanted Government support which should carry accountability with it. The senior management identified themselves as employees, which is what they are, and I promised to give consideration to their requests. Afterwards Bob Wright of the AUEW and Jack Service [of the CSEU] came and we drafted a reassuring statement. (1989:182)

Benn included a participation clause as a condition of the bail-out that management should consult the trade unions on major issues of policy. For the first time, shopfloor representatives from Crewe Toll sat in on talks with Benn (*Evening News*, 7 May 1975). A senior AUEW shop steward at the time said:

> An especially important condition of the 1970s bail-out was the addition of a participation clause by Benn making it incumbent on the management to consult the trade unions on major issues of policy. So there was a certain transparency of decision making and trade union influence on strategy in Ferranti to an extent unseen before. Derek Alun Jones was appointed MD and had a good relation with the trade unions which extended throughout the 1980s.

The unions now found it easier to organise on a Scotland-wide basis:

> Ferranti Scotland did not want to negotiate separately at different sites so a system evolved of centralised Scottish bargaining. This was formalised when the unions drew up the first formal constitution in 1975.

Benn had set the tone for the wave of white collar unionisation by refusing to speak to non-union groups from the company at the time of the bail-out. A Personnel Manager recalled that,

> When some workforce representatives not belonging to an official trade union went down to Parliament to meet [Benn], they were turned away and he insisted in only dealing with the recognised trade unions. This [highlighted the] move ... from the old manual workforce as the bastions of trade unionism to the rising importance of staff unionism as big and well organised ...

An AUEW-TASS shop steward describes the phenomenal rise in white collar unionism over a short period of time in the mid to late 1970s:

> The big breakthrough came in the mass recruitment of test engineers at Robertson Avenue in the mid-1970s once they discovered that draughtsmen and planners already organised in the union were on higher pay rates ... The sudden feeling of insecurity and vulnerability after the financial crisis and government bail-out [also] gave a real impetus to mass staff trade unionism.

This was reflected in TASS threats to escalate the unofficial action being taken by 13 technical authors at Robertson Avenue over the placing of an inexperienced worker in the Department (*Evening News* 10 October 1975). White collar workers had been involved in industrial action in the past, such as the walkouts over wages by drawing office staff at Crewe Toll and Dalkeith in July 1965 (*Scotsman* 28 July 1965). By the late 1970s, however, rapid unionisation, labour turnover, company expansion, the government bail-out and pay curbs altered the character of staff unions; they began to see themselves as more like a traditional trade union than a professional association and took their first steps out of the sectional and craftist shadow of the manual workers.

The tradition of the staff following in the wake of the hourly-paid unions for the annual pay settlement had been reversed for the first time by the Fair Wages award. However, by October 1978, the discontent of hourly-paid workers was also beginning to surface. Sixty-two skilled craftsmen from the Development Department walked out over bonus payments, demanding parity with maintenance workers. The threat of escalating the dispute was made by the AUEW convener, albeit reluctantly. This would be a 'tragic situation', he said,

> Our last industrial action was in 1972 and the firm's industrial relations are second to none. But if this matter is not resolved soon, and it has gone through official procedure over the last eight months, then we anticipate it could lead to lay-offs and the closure of the Dalkeith plant within two weeks. It would not be much longer before it led to a complete closure of Ferranti plants in Edinburgh as well. (*Scotsman* 17 October 1978)

The company felt less need to meet the pay demands of the manuals than they had for the staff and called in the Scottish Engineering Employers Federation to mediate. This time the threats of escalation were withdrawn.

The following year, 1979, the most serious strike in the history of Ferranti in Scotland took place. The unequal treatment between manuals and staff by Ferranti was felt acutely by craft workers, who had long-established traditions of sectional strength. The manual workers union, the AUEW, put in a wage demand for a 25 per cent increase on basic pay to make up for some of the ground lost over the four years of wage controls. In response the company agreed to 13 per cent and a productivity scheme which would be incorporated into basic pay. This offer was rejected outright by the AUEW, resulting in industrial action. The strike by 2500 manual workers was well supported by the membership and lasted for three months, by which time the unions recommended a return to work with very little to show for the action.

Although the company had been damaged by the dispute it had been prepared to sit it out. In part, this was because the dispute coincided with the national engineering dispute, which meant that the company would have had to lay-off workers during the three day week anyway. The conduct of the strike mirrored the way that bargaining within the plant was conducted. One report said, '... the dispute has been a most gentlemanly affair, not least because neither side could see the possibility of negotiations against the background of the national engineering dispute' (*Scotsman* 29 September 1979). Within the plant TASS blacked all work normally done by the strikers and senior managers worked to complete prototype lasers themselves rather than lose a £25 million US Army contract. Nevertheless, the estimated cost of the eleven-week long dispute to the company was put at around £2 million while the profitability of the Scottish Group fell from £6.2 million to £5.7 million (*Scotsman* 25 June 1980). The staff workers, who were not on strike, took out their frustration at crossing the manual workers' picket lines each day within the plant. As a Personnel Manager later put it,

> ... the 13 week long strike of 1979 by the AUEW ... made things inside the workplace extremely tense. There was a range of petty bits of vandalism and sabotage, such as blocking the toilets until they overflowed, by staff employees who remained at work, in support of their brothers and sisters on the outside. The way that the vote was taken to strike gave the unions carte blanche to stay out for as long as they wanted without returning to the membership to get a mandate for the best deal possible. They eventually came back with a marginal rise, about 1.5 per cent. We had to normalise things as quickly as possible to prevent further disruptions and backlashes against people.

One craft trade unionist pointed to the tension between the idea of a paternal, family firm, who resolved problems on the shopfloor by consensus and compromise through face-to-face, informal networks, and the company's hard-nosed attitude to manual workers' pay:

> Ferranti had saw itself as an enlightened engineering company ... Most local things would get settled with very little problem through informal relations or conduits which by-passed the line supervisors. Line management had very little authority to take action because they would ultimately be undermined by the unions contacts with decision makers in the Personnel Department. The company had traditionally been quite mean, they would fight you over a spare penny, so there was a bit of a contradiction between the idea of service and loyalty to the firm and the meagreness of cash benefits for the manuals.

Despite the growing organisation of white collar workers, it would still take another fourteen years before staff and manual unions would come together to take joint action, and even then it would end in acrimony.

Ferranti was the first company in Scotland into the 'sunrise' industries and hoped to influence the employment practices of other organisations in Scottish industry. They attempted to set an example as a 'model employer' to other employers in Scotland in the Engineering Employers Federation (EEF), described by one shop steward as 'a bit of a primitive organisation'. The Ferranti management style and the government bail-out certainly contributed to growing unionisation, although the role of union activists in seizing opportunities to organise, especially in the 1970s, must be central to any account. At Ferranti white collar activists were both hindered and helped by the pre-existing strength of the manual unions; hindered by their sectional and craftist disdain for staff unions, helped by their day-to-day example of how to organise.

In contrast to the popular view of the electronics industry in Scotland as a barren desert for unionisation, the Ferranti case indicates that even highly-qualified white collar workers could become well organised. Unionisation proved possible among white collar workers, many of whom were working at the cutting edge of their technologies. Indeed white collar unions grew in strength after the 1970s crisis and consolidated their position in the 1980s, while blue collar unions were progressively weakening. What is also interesting in the context of a defence company is that the employment of a fairly large pool of ex-servicemen at Ferranti did not prove to be a barrier to unionisation. Indeed, local union leaders were often drawn from this quarter:

> [T]he first white collar trade union secretary was actually ex-RAF and a number of the leading proponents in the trade unions were, and to a large extent still are, people who had

been in the RAF, either doing national service or whatever, rather than coming from science-based companies.

While this may seem surprising, there was little evidence of widespread gung-ho militarism among the Ferranti workers I interviewed:

> There was no real feeling of militarism or patriotism, even though the firm employed many ex-service people, especially electronic technicians. The attitude was more expediently based on the need to bring in a wage at the end of the month and [Ferranti] was as good a place as any to do it.

The evidence of unionisation at Ferranti supports MacInnes and Sproull's research into the extent of union recognition in the electronics industry in Scotland (1989). They conducted a postal survey of 144 electronics plants in 1987 which showed that 100 per cent of defence companies and 100 per cent of plants opened before 1950 recognised trade unions. From the latter it can be inferred that the pre-1950 plant must be Ferranti since the employment levels given for 1987, 5999, roughly correspond to the available data. They also argue, counter-intuitively, using multi-variate analysis techniques that the defence market was *not* an important factor for high levels of unionisation; what seems to matter is the impact of plant size and age. Hence, defence firms were over three times the average size and Ferranti had been opened in Edinburgh for over forty years by 1987.

From the evidence presented here, however, it is clear that the defence market did in fact shape the possibilities for unionisation in particular ways at Ferranti. Although issues of size and age of plant are important factors for unionisation, as MacInnes and Sproull argue, together with management style, as Findlay (1993) argues, for disentangling the direction of causation a more nuanced account needs to be reconstructed. First of all, it is the perpetual expansion and periodic crises induced by defence markets, at least in part, that gave rise to issues of size and longevity for Ferranti. Second, unionisation is, as MacInnes and Sproull argue, an outcome of definite social processes and conjunctures. It is difficult to trace the direction of this from a purely quantitative approach which always risks over-extending explanation. The politico-strategic importance of Ferranti to the UK defence industrial base made some kind of rescue in the mid-1970s inevitable, particularly by a Labour Minister committed to a modernising corporatist project, like Benn. But here, thirdly, the proximity of staff to strong union traditions and embryonic staff union structures become important. Within this context,

the large craftist component of the workforce had already prepared the ground, sometimes negatively, for the extension of organisation into hitherto unorganised sections. Fourth, the management style at Ferranti encouraged stable negotiating arrangements where continuity on technological problems and production required pacific, if not quite harmonious, industrial relations. The family-nation-technology trinity of company identities omitted trade unions as a pole of identification for workers, yet the unions themselves were often pulled in behind the appeal of the Ferranti trinity. That is to say, orderly and 'responsible' trade unions were not incompatible with Ferranti's benign self-image. And finally, of course, there are always the active agents who actually do the recruiting and organising among their co-workers. Their worldviews, determination, enthusiasm, judgement, confidence and so on is of paramount importance - union recognition is not something that merely happens to people because of plant size, age or management attitudes (or defence production, for that matter). Sufficient weight then needs to be attributed to the influence of specifically defence market conditions in relation to age, size and management style as factors in the process of unionisation, particularly for white collar unionisation, and a fuller account given of agency as an active force in the process.

Privatisation

More immediately, a Conservative government had been elected in 1979 and was beginning what would become a long programme of privatisation rather tentatively by selling-off the more obviously attractive and easiest to offload activities. A medium-sized, part publicly-owned, defence-dependent company like Ferranti was an ideal candidate for getting a quick return for the Treasury. Yet the process of selling-off Ferranti proved to be more difficult than originally thought and nothing like as straightforward as the big sell-offs in the second wave of privatisation in the mid- to late 1980s would later appear to be.

Throughout June 1980 a fierce battle was fought over NEB's remaining 50 per cent shareholding in Ferranti. Keith Joseph, the Secretary of State for Industry, wanted to sell the shares, valued at £55 million, to the single highest bidder. This, it was argued, would both realise the best price and help to create a large, UK electronics firm able to compete internationally. The most likely candidate for buying the shares would have been GEC. Yet the mobilisation of the network of political, economic and social interests around Ferranti, with the connivance of the Scottish Office, meant that Joseph was forced to retreat. Hailed at

the time as a victory for the distinctive institutional set up in Scotland, it proved a pyrrhic victory and was the last gasp for technocratic militarism in Scotland.

Politically, its involvement with military electronics assured Ferranti's importance for the British defence industrial base. In Scotland there was the added dimension: Ferranti managers were adept players in Scotland's institutional structures, the 'Scottish lobby', and sat on all the key quangos. The Managing Director of the Scottish group, for example, was believed to have a direct line through to the Scottish Secretary of State (Interview). The Scottish lobby was fully mobilised to prevent the shares being sold en bloc directly to a single purchaser. Although matters of national industrial policy were now to be resolved through the free working of 'market forces', and the Scottish Office publicly denied any involvement to secure a buyer (*Glasgow Herald*, 10 June 1980), it was greatly exercised by the repercussions for the electronics sector in Scotland should a hostile bid be successful. All sides in Scotland were determined to prevent a 'forced marriage'. For the Scottish lobby, Ferranti represented the industrial embodiment of distinctively Scottish interests within the United Kingdom. One Ferranti manager described the relationship:

> Ferranti ... regularly called upon the 'Scottish Mafia' if their interests appeared to be threatened or needed extra clout. The Mafia consisted of the Scottish Office, the Scottish trade unions, the political parties in Scotland, Scottish Enterprise and the Scottish CBI. We all sang from the same hymn book at that time.

Another summed up the situation of Ferranti Scotland:

> ... the Scottish Group accounted for around 30 per cent of Ferranti's turnover but 50 per cent of its profit. There was considerable autonomy and you were left to plough your own furrow. We were also closely in tune with the movers and shakers on the Scottish scene.

Particular concern was expressed in Scotland about what a suitor like GEC, with a track record of selling-off peripheral activities, might do to the operations of the Scottish Group. It was feared that Thatcher had already done a deal with Weinstock and an anti-GEC network of political, labour and business interests quickly emerged in Scotland. Sir William Gray, former head of the SDA, used an honorary degree ceremony at Glasgow University to proclaim his support for the campaign to keep Ferranti in Scottish hands (*Scotsman* 19 June 1980). The Church of Scotland's Home Mission Department also lent support, emphasising the key role Ferranti played in the community (*Scotsman* 17 June 1980). The Edinburgh Chamber of

Commerce were concerned that the sub-contracting work and an estimated 9000 to 14000 additional jobs that Ferranti generated locally would be at risk (*Evening News* 23 June 1980), while Lothian Regional Council were vexed that the one-fifth of Ferranti workers who were qualified scientists and engineers, giving the region six times the Scottish average, would be lost to Lothian (*Scotsman* 25 June 1980).

While union officials were lobbying for a dispersed sale of the shares, the shop stewards at Ferranti were opposed to the sale of the NEB shares and argued for full nationalisation. The Edinburgh office of TASS initially opposed the Ferranti board's desire to see the shares dispersed across a large number of seperate buyers to maintain independence and issued a circular arguing for outright opposition to the piecemeal sale of the government's stake in Ferranti on the grounds that it 'offers at best a delay in possible change of control and a delay in the necessary restructuring of the electronics industry' (*Evening News* 2 June 1980). The TASS executive endorsed a resolution calling on the TUC and the Labour Party to make it clear to prospective purchasers that a future Labour government would reclaim the shares without compensation. Both these positions were quietly abandoned as the campaign unified around the demand for Ferranti's independence to be protected against a predatory take-over by GEC. Gavin Laird, Scottish executive member of the AUEW, was typical, 'I see no reason why it should be sold at all, but to sell it to a single buyer will make a rationalisation programme inevitable and almost certainly to the detriment of Scotland. It would be disastrous for Scotland if Ferranti were to lose their independence' (*Scotsman* 7 June 1980). Doug Rooney, chair of the Ferranti trade union's Scottish Division Participation Committee, made a direct plea by letter to George Younger, Secretary of State for Scotland,

> Accepting that there are idealogical [sic] differences between the viewpoint of the trade unions and the Government, re the role of the NEB in industry, there are surely some things, particularly in connection with Ferranti Scotland, we can agree about. In Scotland we have been fortunate in having an effective management team and one that we support and a community of workpeople prepared to cooperate in order to maintain and improve the competitive position. (in *Evening News* 10 June 1980)

This was a period of deep uncertainty for the workforce. On 19 June, a mass meeting of 3000 Ferranti workers at the Usher Hall in the city unanimously passed a resolution opposing the sale. The following day a letter to the *Scotsman* from 13 workers at Silverknowes talked in terms of 'industrial genocide' in the event of a take-over.

Different solutions were advocated for keeping Ferranti out of the hands of GEC. The SNP Industry spokesman, Tom McAlpine, wanted the NEB shares transferred to the SDA. In this way 'The Ferranti jobs would be secured, a Scottish agency would have a stake in the firm and the fear of more redundancies in job-starved Scotland will have been averted' (*Scotsman* 6 June 1980). Robin Cook argued that the Labour Government had not rescued Ferranti to have it delivered, 'trussed up like a chicken', to be swallowed up by GEC and threatened GEC with referral to the Monopolies and Mergers Commission. Hopes were raised that Edinburgh-based financial institutions, encouraged informally by the Scottish Office, would form a consortium to bid for the shares, although they faced the problem that they could not bid for individual Scottish factories but only for the company as a whole (*Evening News* 9 June 1980). The Edinburgh finance house, Financial and General Holdings proposed a 'restrictive covenant' of two to three years after the sale before the shares could be resold. However, the Scottish financial institutions supported a 'Scottish solution' insofar as it represented a bargain to them and were reportedly only prepared to pay £45 to £55 million for shares with a market value of £55 to £60 million (*Scotsman* 23 June 1980).

The Conservative Party and the Cabinet were split over the Ferranti sale. On one side, Keith Joseph wanted a one-off sale to the highest bidder, while the Employment Secretary, James Prior, backed by Younger and Michael Ancram, chair of the Scottish Conservative Party, argued for a dispersed sale. Joseph attempted to placate the Scottish lobby by arguing that a highest-bid sale would maximise returns to the taxpayer but would not automatically lead to closures in Scotland. He said, 'No potential bidder is going to ignore the importance to Ferranti of its Scottish operations ... It would have to make its bid in such a form to reconcile the management and workforce to ownership by the new company' (*Scotsman* 19 June 1980). GEC broke its customary silence, saying it would be 'inconceivable' that redundancies in Scotland would follow a take-over: 'What would be the point in paying a high price for assets and skills and then throwing them to one side - what benefits would there be for GEC? On the contrary, a connection with GEC would enhance Ferranti's electronics activities and prospects' (*Scotsman* 20 June 1980). Such assurances from GEC were immediately dismissed by the anti-GEC campaign, pointing out the overlap between GEC's Marconi operations in defence electronics and Ferranti's.

With the union threatening to take the opportunity of the Queen's visit at the start of July to open Ferranti's new South Gyle complex on the outskirts of Edinburgh, rumours spread that a favourable announcement would be made quickly. When it came, the announcement was greeted as a victory for Scotland's special interests. The *Scotsman* of the 28 June, under the headline:

YOUNGER WINS BATTLE FOR FERRANTI FREEDOM

reported that a dispersed sale had been approved by the Cabinet. This was a considerable boost to Tory morale in Scotland, with Ancram quoted as saying 'This demonstrates again that the Government do have the special needs of Scotland at heart and are prepared to be flexible in securing these'. The government were reported to be expecting losses of at least £10 million against the market value of the shares and were reluctant to consider further conditions, such as a restrictive covenant, since it would depress the sale price still further. Yet when the full details of the sale emerged a two year restrictive covenant was a condition of the sale. This was further seen as confirmation indeed of the outright victory of the Scottish campaign. An issue of around 10.24 million shares at 530 pence each, with a discount of 11.2 per cent, was expected to raise £54.3 million for the NEB, an estimated profit of £47 million for the government. The NEB would retain nearly 5 per cent of the shares to put in trust for an employee share scheme. As one account of the policy implications note, 'The decision was seen as a victory for Scottish Office Ministers and as confirming Ferranti's continuing financial independence' (Firn and Roberts, 1984:320). While the Scottish Mafia were all singing from the same hymnal however, the Scottish financial institutions were being far more circumspect and, much to the disappointment of Ferranti's supporters in Scotland, only bought around twenty per cent of the shares being offered.

Nevertheless, the Younger announcement brought some relief to the workforce. Although continuing to prefer Ferranti staying under NEB control, Rooney was 'pleased' that the company's independence would not be compromised and curtly rejected reports that Ferranti workers might still demonstrate about the share issue during the Royal visit the next day (*Evening News* 1 July 1980). Workforce relief in avoiding GEC was palpable. One shop steward recalls that 'The trade unions opposed the sale of the state-held shares and argued for full nationalisation in 1980, but the main feeling, at this time of deindustrialisation, was 'thank god we're in the lifeboat'.

The employee share option scheme was also offered to the workforce. Under this provision four per cent of the NEB shares would be available to Ferranti employees. The employee share scheme was viewed by the unions in Scotland with some suspicion. One ex-trade union convener recalls that shares were

> quite widely taken up [although the take up was] comparatively low in Scotland, ... perhaps because of the higher trade union incidence up here ... I think there was something like 3 per cent of the shares in total went to the workforce, so it was hardly a controlling interest.

Another ex-convener claims that Gavin Laird planned to use 'share power' through organising an employee's share bloc. Such plans came to nothing. Instead, employee shares were

> taken up on a mercenary basis ... Needless to say, when the time was up they were promptly sold to pay for holidays, cars or redecorating the house and that kind of thing.

By the time that the restrictive covenant expired Ferranti shares had doubled in value. A hostile take-over by GEC seemed increasingly remote as the company's financial position went from strength to strength in the first half of the 1980s.

Conclusion

By the early 1980s Ferranti had established itself as one of the most important firms in Scotland. A deliberate managerial strategy initially made the growth of Ferranti possible through carving out a niche in indispensable military technologies. Ferranti were therefore able to take advantage of the growing importance of military electronics and the remilitarization of industry during rearmament for the Korean War. The management strategy involved a substitutionist policy for both infrastructural and superstructural deficiencies, once a fairly relaxed degree of autonomy had been negotiated from central control.

The peculiarities of the military electronics sector involved both negative and positive structural capacities. Positively, Ferranti survived and prospered in Scotland where its lack of pre-existing infrastructural and superstructural endowments might have militated against the successful entry and lengthy occupancy in such a difficult environment. It has been argued here that this was largely due to two main factors: the configuration of a talented design team in Edinburgh and the skilful enlistment of British and Scottish-level policy agencies in

establishing Crewe Toll at the intersection of British defence technological needs and Scottish industrial policy for electronics. Within the workforce, staff unions became further embedded because union-builders among the workforce seized the opportune conditions of the 1970s crisis and state intervention to frame a collective solution to their exposure to corporate risk. Negatively, the absence of a commercial 'sales function' for defence electronics curtailed the degree to which a firm like Ferranti can move in and out of different market settings. Where Ferranti attempted to develop a diversified product base in civil technologies they proved to be a constant drain on the profitable defence activities and exacerbated the strain on the limited financial resources of a medium-sized company attempting to stay at the forefront of several technologies. Even where large profit margins could be made, such as on the Bloodhound contracts, much of the money was immediately ploughed back into high risk development and design work. Being tied to defence electronics meant being tied to the political vicissitudes of project cancellations and the public scrutiny of excessive profits. The marketing function in defence industries was premised on selling the customer a technological solution to a problem while, or even before, the product was at the development stage. Sometimes the customer, the MOD, would be actively involved from the development stage, funding at least part of the project, and altering specifications even as the product went into manufacture. Again two things are crucial here: a credible reputation for technological achievement and adopting the political and bureaucratic skills demanded by defence production. These Ferranti in Scotland acquired in time to take advantage of Korean rearmament and proposals for the Scottish Council's Electronics Scheme.

Despite intermittent crises, Ferranti's resilience in Scotland largely stemmed from the fact that it was profitably run as a separate company from the rest of the organisation and was granted considerable strategic and operational autonomy by the centre. This served to confirm the self-image of the Scottish Group as self-sufficient but vital to the company as a whole. This confidence is reflected in the thirty years of almost ceaseless bouts of expansion and innovation. It was also evident in the indignant reaction of the Scottish Group to the financial crisis of the early 1970s and the mobilisation of the Scottish lobby to fend off any threat to this autonomy. After absorbing the scare generated by the sell-off of the NEB shares, the new set-up at Ferranti seemed to be on course to take advantage of the more favourable regime for military electronics under an incoming Conservative government committed to an aggressively nationalistic defence posture. The familiar cycle of expansion and crisis at Ferranti might at last be dispelled.

Chapter 8

From Ferranti International to GEC-Marconi Avionics

Two things dominated Ferranti's prospects in the second half of the 1980s: a £2 billion contract for the radar for the proposed European fighter aircraft (EFA) and a merger with the US defence company, ISC. The merger was to rock the company from top to bottom, putting at risk the European radar contract and consequently the very existence of the company itself. Throughout this period, GEC's presence lurked in the background as Ferranti once again became an attractive proposition for take-over with the expiry of the restrictive covenant in the early 1980s. For a large diversified company like GEC, redoubling its efforts to dominate the defence electronics market, control of Ferranti would eliminate a smaller but important rival in a number of areas. For a medium-sized company like Ferranti, a merger with ISC offered a way to protect its independent status from GEC and give it a big enough capital base for future R&D investments. The merged company existed for less than two years until Ferranti found out that they were victims of a multi-million pound fraud. Fifteen years after the NEB rescue, Ferranti were bailed-out again only this time by the GEC. What emerged from this was a changed organisation, in part moulded by the wider forces of defence industry restructuring; the corporate style of the industrial giant, GEC, who took over the ailing Ferranti in 1990; the weakening influence of the Scottish lobby; and shifting industrial relations. In sum, the forty years of almost continuous growth, inter-generational employment patterns and paternalistic work relations were to be rudely severed in the 1990s.

The second half of the 1980s might therefore seem to be merely preparing the conditions for the inevitable GEC take-over in 1990. While it will be argued that there are good reasons for taking a restructuring perspective this must also be able to account for the specific conjunctures within which Ferranti became embedded. These include issues within the company of management style, of technology versus economy, the judgement of decision-makers to merge with ISC and the over-riding desire for company independence. Taken together these tell us something about one particular company in a specific location. This risks seeing the ISC debacle as either inevitably derived from organisational deficiencies or from the personal failings of individuals. Important though these factors may be, it is necessary to stress the wider context of defence industry

restructuring and, in particular, the rise to dominance of GEC's virtual monopoly in defence electronics.

In this section, the importance of EFA to Ferranti and British industry will be established. Some discussion will follow on the Ferranti/ISC merger. The most important task, however, will be to understand GEC's role as a diversified corporation making strenuous efforts to position itself as the dominant force in the UK defence industrial base in the decade following 1985. This will mean an examination of the two phases of corporate restructuring between 1967 to 1972 and 1985 to 1995. The earlier phase established a pattern of acquisition followed by thorough rationalisation. The later phase will concentrate on acquisitions within the UK defence industry. Particular account needs to be taken of the Conservative government's pro-market competition policy and the problem posed for this by the emerging GEC monopoly in many defence product areas. An examination of the merger process and the role of the Monopolies and Mergers Commission, as one of the few statutory instruments available for publicly shaping the structure of the defence industry, would show de facto state support for 'national champions' like GEC. Ultimately, competition policy for the defence industry has been, at best, inconsistent although perhaps it can be more accurately described as incoherent. The differing management styles of GEC and Ferranti will be contrasted as a preliminary means of measuring the scale of the changes at Edinburgh after the take-over.

EFA and British industry

A four-nation European collaborative project to develop a new generation of agile, single-seat fighter aircraft was formed in August 1985. Agreement was finally reached after years of wrangling, principally between the British and French governments and their respective aerospace companies, British Aerospace and Dassault (Hayward, 1989:179-183). The British aerospace industry developed relationships with European companies. Seven British companies had been involved since 1982 in the Experimental Aircraft Programme (EAP), the precursor for what would become the EFA project (Enserink, Smit and Elzen, 1992:101).[1] With France dropping out after the early studies to pursue a national alternative aircraft, Rafale, the remaining governments, the Federal Republic of Germany, Spain, Britain and Italy set up two consortia - Eurofighter and Eurojet. Eurofighter is responsible for developing the airframe, avionics and weapon system;

Eurojet for developing the engine. Both consortia are German registered companies. The direction, co-ordination and execution of the joint programme for the development, production and in-service support of the European Fighter Aircraft (EFA), comes under the overall control of NATO European Fighter Development, Production and Logistics Management Organisation (NEFMO).

Based on the multinational Panavia consortia which produced the Tornado fighter, this was to be one of the largest industrial undertakings which the British government had ever sponsored and was the most ambitious co-operative venture in Europe, according to one of its architects (Heseltine, 1989:203). In 1990 Britain's share of the work for developing EFA was estimated to be around £1,800 million, one-third of the total cost, providing direct long term UK employment for 3-4,000 people (HC380, 1990). The British Prime Minister, Thatcher, was reported to be concerned about committing the MOD to such a large programme as EFA, which was being opposed by the Department of Trade and Industry (Clark, 1994:256).

EFA has become a classic example of the problems posed by international collaboration in such a politically sensitive industry as arms production. Nationalism and 'national interests' are always uppermost in the minds of politicians and state officials when deciding on defence procurement. As Secretary of State for Defence, Heseltine (1987:267) argued against large scale nationally-based weapons projects. Instead he advocated European co-operation in production and procurement to withstand the pressures from US advantages in economic scale and technological scope:

> To a minister in his national capital the easy and traditional way forward is to wrap a project in the eloquence of the Union Jack or the Tricolour ... It is natural for the leading companies in each country to push continually for supremacy, and natural for officials to join industrialists in putting to the minister what appears to be the national, the patriotic case. The industrialists in every country have access to the member of parliament whose constituents they employ, and to the journalist hungry for stories of ministers who are about to sell the national interest short.

Heseltine resisted the argument for the British government to follow the French example and to design and build the new fighter on its own. He recalled, 'The arguments were venerable, seductive and mistaken: British was better, the RAF would control the specification and British jobs were at stake' (Heseltine, 1989:203). For Heseltine the solution lay in the principle of *juste retour*,

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[1] The seven British companies involved in the EAP were: British Aerospace, Rolls Royce, Dowty, Lucas, Smiths Industries, Ferranti and GEC Avionics.

according to which the final national division of work from the project is proportionate to the final number of products which will be ultimately purchased. Yet *juste retour* and ministerial determination cannot easily overcome duplication, waste and inefficiencies borne of the national basis of defence procurement. Each national government seeks to have the work share package distributed to the advantage of domestic industry but wishes to spread the cost burden of development across national boundaries. In contrast, the US has advantages of a single currency, language, governmental apparatus and technical standards. Attempts to move away from national self-sufficiency and *juste retour* have been proposed by Roger Freeman, the UK Procurement Minister, so that work would in future be awarded on the basis of capability and cost and not on the number of orders each country makes. This approach is being adopted for the Horizon programme to develop the next generation of frigates for the UK, France and Germany (Gray, 1995a:17).[2] Table 8.1 indicates the revised work share for EFA in the two years between 1990 and 1992.

Table 8.1. Revised work-share for EFA based on announced plans, 1984-1992

Country	1984 numbers planned	1984 work share at feasibility stage (%)	August 1985 work share (%)	October 1985 work share (%)	1992 work-share (%)	1992 numbers planned
Germany	250	*25*	*38*	*33*	*30*	200
UK	250	*25*	*38*	*33*	*37.5*	250
Italy	165	*15*	*24*	*21*	*19.5*	130
Spain	100	*10*	-	*13*	*13*	87
France	-	*25*	-	-	-	-
Total	765	-	-	-	-	667

Source: SIPRI Yearbook 1994, p427; Elzen et al, 1990, pp175, 178.

Creasey and May (1988:1-2) listed three typical problems which arose with EFA: apportioning work-sharing and design leadership; the standardisation and interoperability of common components and sub-systems enabling optimal European systems integration; and European fears of US control over the transfer of 'sensitive technologies'. The production of the F-22 fighter, for example, the nearest US equivalent to EFA, is confined to a single procurement environment and able to employ the latest electronic scheduling, process and costing technologies across the project

[2] See Gray (1995a) for a useful summary of European rationalisation in the light of deep restructuring of US defence industry. In US employment is down from 1.3million to 800,000 in 3 years while firm size is

before the major sub-assemblies are integrated at the final assembly line. The allocation of inter-state workshares in the US is done on the basis of Lockheed Martin and Boeing's existing worksites, without the arbitrary divisions of labour and national-state conflicts in European arms collaborations. The problems that confronted Ferranti in bidding for the EFA radar contract highlight these and other obstacles for a medium sized company wanting to stay at the cutting edge of weapons technology.

It is possible to get beyond generalised notions of the UK defence industrial base and identify more precisely the scope and location of industrial activity for EFA. In 1992 the national trade association for the UK aerospace industry, the Society of British Aerospace Companies (SBAC), conducted a survey among its members into the EFA supply chain and presented some of the findings to the Trade and Industry Committee's investigation into the British aerospace industry (HC 563 I & II, 1993). The supply chain uncovered by the survey involved complex interdependencies between the three major prime contractors, British Aerospace, Rolls-Royce and GEC, 314 separate first tier suppliers and a further 250 second-tier companies. The survey found that over two-thirds of the first-tier suppliers would simply not be classified as aerospace companies under SIC 364. In terms of geography, the aerospace-industrial complex exerts a distinct southern bias at all levels of the supply chain (Table 8.2). The majority of first-tier suppliers, 55 per cent, were located in the South East, with second-tier suppliers only slightly less concentrated with 48 per cent of suppliers in the South East. Only five UK regions hosted second-tier suppliers, a reflection of the regional concentration in the aerospace-industrial complex, with a mere 3 per cent in Scotland. Of the 165 first-tier companies that responded to the survey just under three-quarters employed fewer than 300 people (Table 8.3). From a total turnover of £980 million, the turnover of the average company in the first-tier supply chain was around £50,000 per employee, which rose to £66,000 per employee when larger companies were included in the calculation (HC563 II, 1993:61). An employment cascade effect is evident between the three tiers, so that for every five jobs created at prime contractor level approximately another three are generated at the first-tier and a further two at the second-tier (Table 8.4). At the development phase few companies were more than 10 per cent dependent on the Eurofighter project for work (Table 8.5). Small to medium enterprises (SMEs) showed higher levels of dependency at the developmental stage than larger ones, increasing from 4.8 per cent of turnover during development

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growing through mergers and asset sales. Except for UK, continental European firms remain 'overstaffed'

to 12.1 per cent at maximum production, compared to average dependencies of 2.8 per cent at development and 7.1 per cent during production for larger ones. Beyond the three primes, therefore, the typical company was a small to medium firm, with slightly higher levels of dependency on EFA than the primes. EFA thus became a critical project for the British aerospace-industrial complex, supporting, in part, well over 500 first- and second-tier SMEs, mainly, although not exclusively, in the South of England.

Table 8.2: Eurofighter 2000 supply chain: location of second-tier companies

Location	Percentage of suppliers*
South East	48
Midlands	19
North	15
South West	11
Scotland	3

Source: SBAC Eurofighter supply chain study, HC 563 II, 1993:63
*Note: figures do not add up to 100 per cent.

Table 8.3: EFA supply chain: first-tier company turnover and employment

Employment range	Number of companies	Company turnover (£m)	Number of companies
> 20	19	> 1	15
21-50	23	1-5	44
51-100	22	5.1-10	37
101-200	30	10.1-20	29
201-300	25	20.1-30	13
301-500	19	30.1-50	8
501-1000	8	50.1-100	14
1000-2000	14	<100	5
<2000	5		
Total	165	Total	165

Source: SBAC Eurofighter supply chain study, HC 563 II, 1993:61

Table 8.4: EFA supply chain: employment estimates*

	Current position (1993)	Maximum production
Prime contractors	7500	17500
First-tier suppliers	4000	14000
Second-tier suppliers	2500	8500
Total	14000	40000

Source: SBAC Eurofighter supply chain study, HC 563 II, 1993:63
*Note: the figures have been derived from a bar chart and give only a rough equivalence

because of 'entrenched employment rights and a political climate which opposes large scale redundancies'.

Table 8.5: Eurofighter 2000 supply chain: dependency ranges of first-tier companies

Dependency range (%)	Current position (1992)	Maximum production
<40	5	10
30-40	4	11
20-30	4	26
10-20	25	33
5-10	27	45
2-5	37	26
>2	63	14

Source: adapted from SBAC Eurofighter supply chain study, HC 563 II, 1993:62

ECR-90: the Ferranti bid for EFA

As a medium-sized, first-tier supplier, Ferranti proposed an enhanced version of its modern multimode radar, Blue Vixen, as its bid for the radar for EFA. Blue Vixen had been part of a Ferranti-funded programme, Blue Falcon, to develop the next generation radar. The MOD funded the development and production of Blue Vixen after 1983 for the update of the Sea Harrier aircraft (Elzen et al, 1990). As early as 1984, Ferranti had been involved in discussions with Thomson-CSF of France and AEG of West Germany about collaborating on radar and avionics for EFA. Thomson left the emerging radar consortium when France dropped out of the EFA project in 1985. In the end, Ferranti went forward with two bids. The main Ferranti tender was a 'fully compliant' bid termed 'ECR90' (European Collaboration Radar for the 1990s), with Ferranti acting as prime contractor in accord with European partners, FIAR of Italy, Siemens of Germany and Inisel of Spain. The alternative Ferranti bid was for a stand-alone contract for a radar called 'Super Vixen'. Siemens had been brought into the Ferranti-led consortium in 1989 to strengthen the political appeal of its bid in Germany. The rival bid came from the MSD-2000 radar, proposed by a consortium comprising Britain's national electronic giant, GEC, AEG Telefunken System Technik (TST) of Germany and Hughes of the US. The MSD-2000 was to be based on the existing Hughes APG65 radar. GEC had been brought into the consortium in 1986, strengthening the political appeal of the AEG bid in Britain. The relationships between the companies who composed the two consortia were liable to shift under political pressure. The two consortia mobilised within the pre-set four nations involved in EFA to form alliances and collaborations with industry, politicians, services and defence departments (Elzen et al, 1990). With the exception of Britain, the other countries nominated a single company to represent their national work share. British companies were left alone by the government, at least formally, to compete among themselves to represent the

UK work share. Thus AEG had been part of the original Ferranti-led development team and companies entered arrangements to participate in whichever radar was finally chosen. If ECR-90 were awarded the contract, AEG would join Ferranti, FIAR and Inisel, while FIAR and Inisel would join AEG, Hughes and GEC should MSD-2000 be selected. This left GEC, Ferranti and Hughes as the only companies risking complete failure (Elzen et al, 1990:183). In the main, though, each consortium was identified with the interests of the nation from which the consortium leader derived, the UK for Ferranti, Germany for AEG.

In late 1986 the NEFMO board visited Scotland to witness flight trials at Turnhouse and were 'suitably impressed' with the Blue Vixen prototype radar fitted to the nose of a BAC 1-11. The Prime Minister, Thatcher, also supported Ferranti's impending bid with a visit to South Gyle that year and reportedly left 'very impressed' (Ferranti, 1993:64). These two visits opened up a phase of intensive lobbying in early 1987. The lobbying effort was extensive and included presentations to representatives of the RAF, Luftwaffe, MPs and Ministers. The complexity of the Ferranti proposal was indicated by the amount of paperwork generated, including 122 separate ECR90 reports.

By 1987, Ferranti seemed to have itself well-positioned for the EFA contract, and thus securing continued growth and prosperity for its Edinburgh operations. A series of political alliances had been built, in Europe as well as in the UK, based on a widely renowned reputation for leading-edge radar technology. However, as a medium-sized company niggling doubts existed, particularly in West Germany, about Ferranti's ability to cope financially and project manage such an ambitious, complex project. A merger or partnership with another company of international standing would go some way to alleviating such fears. At the same time, it was important to the Ferranti board and the Scottish institutions, that its status as an independent company be preserved. It was widely anticipated that sooner or later GEC would be making a play for Ferranti's defence electronics activities. Ironically, it was precisely the series of decisions that followed from the desire to remain independent that would result in the eventual GEC take-over of Ferranti.

Crisis and take-over

Within eighteen months of merging with the US company, International Signal and Control (ISC) on 21 September 1987, Ferranti's fortunes as an independent player in the defence market changed

dramatically. This was a clearly an ambitious attempt by Ferranti to become a major international defence company. After deciding to concentrate on core defence activities, Ferranti's semi-conductor business was sold off to Plessey and the US subsidiary, Ferranti Defense Systems, acquired the advanced laser technology project group of General Electric, while in the UK the military trainer and air launcher businesses of Wardle Storeys was acquired. One Ferranti manager explained the rationale behind the ISC merger thus:

> The ISC deal seemed to give us three basic things that we were badly needing:
> 1. It seemed to give us a massive order book
> 2. It seemed to give us access to the lucrative US market
> 3. It seemed to give us the critical size for getting the credibility for taking on EFA.

Underlying this attempt by Ferranti to become an international defence company was an assumption about retaining the power of independent company decision-making: 'The ISC merger was an attempt to broaden our portfolio and give us the scope *to merge or not to merge on our own choosing*' (emphasis added).

The relationship with ISC began modestly enough when an £18 million contract was agreed earlier that year for advanced electro-optic equipment with the Electro-optics Department in Edinburgh. ISC had been founded by James Guerin in 1971 and registered sales of $591 million in 1987 (*The Economist*, 26 September 1987:83-4; Todd, 1990:157). Ferranti offered nine of their shares for every five ISC ones in the merged firm. The share values of both companies rose sharply after the announcement, Ferranti's by 7 pence to 137 pence per share and ISC by 18 pence to 237 pence per share. This movement in share prices placed a value on ISC at £420 million, a good result for the ISC directors who held around 12 per cent of ISC shares. The merged company claimed sales of $1.6 billion, with around 65 to 70 per cent of its business coming from defence contracts. Guerin claimed that with Ferranti's technical excellence allied to ISC's marketing expertise the company would gain access to markets worldwide (Ferranti, 1993:65). The merged company would employ 26,000 workers in twelve countries. Sir Derek Alun-Jones, chairman of the combined group, said, 'The merger will produce a strong international group with great capability in electronic systems and products' (*Evening News* 21 September 1987). To reflect this international orientation the company was renamed Ferranti International Signal plc, later simplified to Ferranti International.

Nothing at first changed very much in Edinburgh. Operational matters were untouched by the merger, which was seen optimistically as giving Ferranti enough market scope to repel the unwanted attentions of GEC. Ferranti Defence Systems in Edinburgh was contributing around one-third of profits and sales to the company at the time of the merger. Indeed the Scottish dimension seemed to become even more important in some ways. Ferranti International Signal held its first board meeting in Scotland, at Edinburgh City Chambers. There Sir Derek Alun-Jones emphasised the Scottish identity,

> We are proud of our Scottish tradition. The opening this week of our new factory at South Gyle has underlined our commitment to continue and further our links here' and now that Ferranti had the stature of a multinational company the Scottish reputation for skilled engineering would be helpful in increasingly competitive markets. (*Evening News*, 29 July 1988).

Less than two years later the commercial naiveté of Ferranti's merger with ISC was cruelly exposed. Guerin announced he was leaving Ferranti International to 'pursue other interests' on the 8th May 1989. On his departure Guerin purchased the ISC Technologies Inc. part of Ferranti International. With the release of Ferranti's Annual Report in August speculation grew about the financial health of the company until its shares were suspended on 11th September 1989 for further investigation into irregularities arising from contracts entered into by ISC Technologies Inc. A detailed investigation by Coopers & Lybrand revealed that Ferranti had been defrauded by Guerin and ISC to the value of £215 million. ISC simply did not have the contracts that they claimed to have while other arms contracts with the Pakistan government had been obtained clandestinely (*Financial Times*, 27 January, 1990). As a result £215 million which had been included in Ferranti's financial calculations was not available to the company and had to be written off. The High Court ordered Guerin to repay Ferranti £189 million and Ferranti finally got £40 million compensation from the auditors, Peat Marwick McLintock.

The financial crisis this caused at Ferranti had serious repercussions for keeping the EFA project alive. The decision to award the radar contract for EFA was repeatedly delayed amid nationally-based disputes involving Britain and Germany between 1987 and 1990. Eurofighter GmbH based in Munich had been formed by the prime contractors to decide on the allocation of major sub-systems such as radar, based mainly on economic and technical grounds. When it was forced to make a decision in 1988 it split along national lines, with BAe backing ECR90 and the German MBB, MSD-2000 (Elzen et al, 1990:182). The decision was passed between GmbH, who viewed

the outcome of the bidding as resting on political criteria, and NEFMO, who hoped for a technically-based decision. Germany favoured the MSD-2000 bid because it was based on existing technology, making it less risky, and it fulfilled Germany's operational requirements. They also cast considerable doubt on whether Ferranti could deliver ECR90 to specification, cost and time. The acuteness of the German Defence Ministry's concern was underlined by the responsibility of German firms' MBB and Dornier for integrating the radar (HC 380, 1990:25). Because of the territorial workshare principles which apply for EFA, Germany would have to fund any additional costs arising from disruption to the radar integration programme, even if the territorial source of that disruption was Edinburgh-based. In contrast, Britain favoured ECR90 because it was more advanced and fulfilled operational requirements better than MSD 2000. The British government argued that it would be less risky to develop because it was a derivative of the Blue Vixen radar which was then being developed for the Sea Harrier. The British also claimed that it was the cheaper of the two bids and would remove European reliance on US technology.

The success of Ferranti's bid in the EFA radar competition and the continuing radar development and production capabilities in Edinburgh were thus seriously jeopardised by the financial malaise and uncertainty surrounding the parent company. Under any circumstances EFA had to be saved such was its importance to British industry as well as the RAF. The British government in turn were worried about Ferranti's commercial ability to honour the contractual obligations to fully develop the radar for EFA. The ISC fiasco had put Ferranti's commercial judgement in serious doubt and might give the German government the perfect pretext for withdrawing and thereby jeopardise the whole project. Germany insisted that the British government provide assurance about the financial viability of Ferranti and indemnify German companies against additional costs which might arise from the failure of Ferranti to deliver to specification or on time (*Financial Times*, 2 February, 30 March 1990; HC 380, 1990:25).

Some kind of take-over or bail out was therefore essential; essential for the British government's stake in EFA and essential for Ferranti's very survival and the continuation of their advanced technological capability in Scotland. The ideological outlook of the government made a direct infusion of public cash to stabilise Ferranti, as happened in the 1970s, extremely remote, although if no other means of support emerged then it could not be ruled out. To avoid a public *volte-face* on public subsidies for 'lame ducks', government departments were instrumental in arranging a take-

over of Ferranti, or at least its defence division, Ferranti Defence Systems Ltd (FDSL), making use of informal contacts in the 'cosy boys club' of the British defence industry.

GEC, the electronics giant eventually emerged in early 1990 as the saviour of FDSL and with it EFA. The government were instrumental in arranging the take-over, dangling the ECR-90 contract before GEC. One GEC director described the role of the MoD in securing the Ferranti deal as 'the benevolent father of the bride' (*The Economist*, 27 January 1990; Dixon et al, 1990a). Alan Clark, then Minister of State for Defence Procurement, records how his acquaintance with the chairman of GEC, Arnold Weinstock, now Lord Weinstock, benefited the mutual interests of the Conservative government and GEC:

> ... Periodically I talked to Arnold Weinstock. By sheer energy and clarity of thought I put together the deal that saved Ferranti, and its Radar, and thus EFA in time for us to outface Stoltenberg [the West German Defence Minister] on Monday when the German delegation come over. (Clark,1994:274)

Initially British Aerospace and Thomson-CSF of France had been interested in a joint bid for FDSL. The Defence Secretary, Tom King, and Peter Levene, the defence procurement official, were busy persuading potential foreign bidders - Thomson of France, Daimler Benz of Germany, Westinghouse of the US - to work with a British company in their bid since direct foreign ownership of Ferranti would be unacceptable. Yet Ferranti boss, Sir Derek Alun-Jones got the impression that the importance of nationality was on the wane.

> The Government seems to be far less concerned with the nationality issue than it has been in the past. I haven't got a single chit from Mrs Thatcher, but it must be a lower priority. I don't think competition, the criterion which previously ruled out GEC, is quite the priority that it was' (*Scotsman* 16 January 1990).

The delay in finding a partner, according to Murray Johnstone, the consortium responsible for the reconstruction of Ferranti, was caused by the Ferranti board's insistence on receiving an outright bid for its assets, BAe's low bid of 56p per share and Thomson's desire to examine Ferranti's uncertain financial position with 'due diligence' (*Scotsman* 14 October 1989). Thomson, as Europe's main defence electronics company, was widely expected to take-over of FDSL but announced on 19 January 1990 that the price was too high after their £200 million bid for the radar division was rejected by the Ferranti board, wiping millions of pounds off Ferranti shares.

Ferranti's reluctance to sell what it considered 'the jewel in its crown' to Thomson only increased the nervousness in Edinburgh about the destiny of the radar contract.

Thomson were opposed on national grounds by the Ferranti-led Scottish lobby. As a leading international competitor, ultimately owned by the French state, it was feared that Thomson would always favour home-based production at the expense of the Edinburgh operations. Robin Cook, Labour MP for Livingston, said, 'We will be trying to convince Sir Derek on the folly of any move that lets Thomson get their hands on this strategically important British company' (*Evening News* 11 October 1989). Thomson's withdrawal was welcomed by the Scottish trade unions, who had considered it the worst possible deal. Campbell Christie of the STUC indicated that the Scottish Office shared their concerns but could not become publicly involved (*Scotsman* 11 November 1989). After meeting with the Ferranti board Labour MPs were 'impressed' that adequate funding for the next year had been secured and the 'threat to Ferranti jobs in Scotland has now been removed, provided the board does not sell out to some marauding asset stripping company only interested in short term profit' (*Evening News* 19 December 1989). A Thomson take-over of FDSL would also have further damaged GEC's already weakened relationship with BAe by giving BAe a choice of two British-based suppliers to fit out its military aircraft. There was also talk of setting up a Scottish-based defence company owned jointly by Ferranti and a partner (*Scotsman* 19 January 1990).

Meanwhile, the German Defence Minister, Stoltenberg, continued to doubt whether Ferranti's financial position had been stabilised. Above all, it was this risk of losing the £2 billion radar contract due to German objections to Ferranti's financial weakness that forced the board to relinquish their plans for using FDSL as the basis for reviving the groups fortunes and accept GEC's £310 million bid, fifty per cent more than Thomson's bid. In this tangled web of corporate and political intrigue were caught the reluctant seller (Ferranti), the canny buyer (GEC), the failed bid to internationalise the UK defence industry (Thomson), behind-the-scenes UK government intervention and the more visible efforts of the Scottish lobby. The final decision in May 1990 confirming the selection of ECR 90 was neither a result of strictly technical-cost nor political criteria, but a confusing mixture of compromises and careful network-building by Ferranti, especially by bringing Siemens into the consortium. Ultimately, however, ECR-90 was selected because of the determination of the UK government to save it by inducing a GEC take-over of the

crisis-ridden Ferranti. A GEC take-over allowed the government to meet the dual assurances sought by Germany on ECR 90. First, the GEC acquisition of FDSL removed any doubts about the future commercial and financial viability of the lead company in the ECR 90 consortium. The second condition was met when the government agreed to indemnify Germany to a liability ceiling of DM200 million. In turn the government signed a 'watertight' back-to-back agreement with GEC which ensured that the financial impact of the indemnity would be entirely borne by GEC and its industrial partners, posing no risk to public funds. (HC380, 1990:26). The result was to strengthen the concentration of UK defence electronics in GEC's hands.

The way was clear, then, for GEC to submit a bid to take over FDSL on 23 January 1990, the day after news had been leaked that Ferranti's ECR90 radar had been chosen for EFA, with official government approval for the acquisition given a fortnight later (*Financial Times*, 23, 24 January, 10 February 1990). The reported 'jubilation' in Edinburgh over the £2 billion radar contract made the traditional spectre of GEC seem less ominous than in the past.

GEC had, in any case, long wanted to be a suitor for Ferranti. Indeed, according to company informants such was GEC's formidable reputation for rationalisation in the pursuit of cash growth that it was the prospect of a GEC take-over which drove Ferranti into the arms of ISC in the first place. By the time of the take-over, however, the bargaining position of GEC was strengthened considerably while Ferranti's was virtually non-existent. The purchase of FDSL enabled GEC-Marconi to participate in the much-coveted radar contract and so preserve GEC's airborne radar business, which would have been at serious risk without the contract. Yet this was more than what *The Economist* called 'an ingenious - if extreme - way to win contracts' (27 January 1990). With the take-over of FDSL, and Plessey before it, GEC would also be in a position to rival Thomson as the major military electronics equipment company in the new European arms industry.

Some workforce representatives, however, got the impression that Weinstock was a 'reluctant purchaser' of FDSL. 'It was quite clear that [Weinstock's] attitude to [Ferranti] was that he was the reluctant buyer and that any periphery operations or anything not directly related to the radar was probably in competition to stuff GEC were doing elsewhere anyway' (Interview with ex-MSF representative). In the light of the back-to-back indemnity agreed with the government for ECR 90, the GEC take-over was not entirely risk free. Indeed, GEC attempted to recover some of

purchasing finance from Ferranti a few months later (*Financial Times* 11 September 1990). Any sense of reluctance on the part of Weinstock, however, may in fact have more to do with the particular management style at GEC than hesitancy over the chance to take over one of Britain's leading avionics firms, long-pursued by GEC, and the EFA radar contract into the bargain. Some discussion of the evolution of corporate style at the centre of GEC's operations is therefore necessary. This will also allow a comparison to be made between the earlier phase of GEC restructuring between 1968 and 1972 and the current phase since 1990 and a contrast drawn between the management styles at GEC and Ferranti.

The two phases of GEC restructuring

The first restructuring phase, 1967-72

GEC in its present incarnation can trace its roots down to the attempt by the Labour administration of 1964 to 1970 to create an internationally competitive electrical engineering conglomerate and to limit competition between three leading British companies, Associated Electrical Industries (AEI), English Electric (EE) and General Electric Company (Jones and Marriott, 1970; Williams *et al* 1983: 134-140). In 1960 GEC took over Radio and Allied Industries and acquired the managerial skills of Arnold Weinstock, who became managing director of GEC by 1963. As GEC's short-run profitability performance attracted the favourable attention of the stock market, they were able to take-over AEI in 1967 and merge with EE in 1968, both larger companies than GEC. This represented two brilliant financial coups for Weinstock, paying less than £16 million for two major firms with a combined turnover of more than £660 million - against GEC's £180 million - and a joint asset value of £460 million (Williams et al, 1983; Jones and Marriott, 1970).

This process was initiated and actively supported by the Industrial Reorganisation Corporation (IRC), which had been set up by the Labour government to facilitate the rationalisation of 'white hot' privately-owned industry. The IRC lasted from 1966 to 1970. Economic 'modernisers' like Tony Benn at the Ministry of Technology and Anthony Crossland at the Board of Trade, buoyed by an idea of British technical progress, declined to refer the GEC/EE merger, at that time the largest in British history, to the Monopolies Commission, despite the fact that it created new monopolies and reinforced an existing one. The Labour government attempted to balance its commitments to industrial efficiency, trade union consultation, regional policies and the

maintenance of effective competition in the industry (see the Statement by the President of the Board of Trade, in Jones and Marriott, 1970:334-5). Benn's tacit support for the GEC/EE merger included a commitment by the company to 'cooperate on discussions on redundancy. But the creation of these mammoth private companies with Government support and encouragement is a very big political issue which has to be tackled' (1988:100). Instead, GEC was left alone by the government to get on with restructuring the industry.

Rationalisation, communities and trade unions

Government support for 'industrial modernisation' meant backing the Weinstock management style. GEC carried out a programme of restructuring to eliminate over-capacity and duplication between the merged firms. Restructuring meant the workers in the affected industries would face fewer potential employers; the most labour intensive plants would face closure; the labour process would itself be intensified and automated wherever possible; and new techniques and technologies introduced (Massey and Meegan, 1978; Massey, 1978; Cowling et al, 1980: 245-247). The merger offered almost immediate possibilities of savings and money-making. As Williams et al (1983:139) comment, 'There were thus substantial overlaps offering immediate savings through rationalisation - which, as usual, mostly served as a euphemism for closing plants to concentrate the production of particular lines'. By 1972, 155 separate operating units were reduced to 64 and of the 171 major locations only 29 were unaffected by rationalisation, 49 were closed down and 10 were sold. The workforce of the merged company was cut from 241,000 in 1968 to 170,000 by 1972 (Cm 9867, 1986:3; Cowling et al, 1980:267-9).

GEC thus acquired a reputation for growth through acquisition, followed by rationalisation and mass redundancies. At the beginning of the rationalisation process, GEC's handling of redundancies was simply inept. The closure of the five AEI factories at Woolwich in 1968 with little initial consultation came as a shock and GEC were blamed by the trade unions, the community and the press for 'causing' the closures (Cowling et al, 1980:251; Newens and Adams, 1969). Both AEI and EE were described as favouring paternalistic management styles (Jones and Marriot, 1970; Newens and Adams, 1969) and the way that the redundancies were handled by GEC seemed particularly callous. Although redundancy terms were improved at Woolwich after union and media pressure, the unions felt that AEI would have handled the redundancies more 'humanely' than GEC. In response to 'the sense of employment insecurity which the mergers

produced in some parts of the Company', GEC, under government pressure to consult, set up a non-negotiating national joint consultative council (NJCC) to consult the unions about planned redundancies: 'Among management, the concept of the Council acknowledged that Trade Unions have an important and justified interest in the timing, location and character of major merger rationalisation; indeed, in any matters which could have a significant impact on employment' (GEC internal document, quoted in Cowling et al, 1980:252).

The basis of the consultation stipulated that there would be no compulsory redundancies, no national policies on redundancy terms and that the unions were not obliged to 'acquiesce' after consultation, retaining the right to take 'normal action'. The union officials believed that their role on the NJCC reduced the number of redundancies and improved the management of the redundancy process. Soon after the formation of the NJCC, GEC issued its plans for the major factories, including a list of 19 factories, whose future had not yet been determined. Instead of allaying fears, the list created deep and prolonged uncertainty among the affected workers; eighteen months later 11 of the 19 factories were still unaffected by rationalisation (Cowling et al, 1980:256-7). The unions were also split by plant location and skill. While the AUEW supported plant bargaining, reflecting its sectional strength, APEX supported a national plan, since GEC were finding it easier and cheaper to implement redundancies on a plant by plant basis; a national agreement would have raised all plants to the level of the largest, highest paid ones. The skilled workers organised by the AUEW were often tied to industry-specific trades and so were more militant and less willing to volunteer for redundancy than the 'unskilled', 'semi-skilled', foremen and technicians, who were less tied to the industry and were more willing and able to transfer their skills for similar rewards. The other divide that appeared was between the NJCC and plant-level shop stewards. Because of its role in the redundancy process, the NJCC became known as the 'burial party' and was distrusted by the shop stewards. This impeded the development of plant-level JCCs, which were viewed by the shopfloor as 'minor sacking committees' (Cowling et al, 1980:255). Yet sometimes the union officials complained that they were more militant than the people they represented.

The different forces and interests operating during the restructuring process proved extremely difficult for the Labour government, and Benn in particular, to reconcile. Here, for instance, Benn describes his experiences at the GEC/EE factories in Liverpool in September 1969 where 3,000 redundancies resulting from the merger had been announced:

> We went straight to the Netherton factory ... I was greeted by the management, and then went round with the shop stewards. They were a very decent crowd and they had a great possessive sense about the place: this was their factory. I told them frankly that there was not much hope of saving jobs ... I met the trade union officials, two of whom were extremely offensive, and made no progress at all ... The shop stewards' 'Action Committee' had turned up to speak to us and the trade union officials would not let them in to the meeting. *Weinstock was abused and I had to stand up for him* ... the Action Committee were waiting to see me ... they said that Weinstock had refused to meet them. (1988:202; my emphasis)

Evidently, the restructuring process resulted in a deep distrust of GEC on the shopfloor and among union officials. GEC preferred non-unionised labour but in conditions where it inherited recognised unions, IRC insistence on consultation and the political pressures on GEC after Woolwich, meant that it could not merely by-pass or directly confront organised labour. Local management seemed to have been less concerned about formal union protocols than GEC nationally, and Cowling et al report that cases where shop stewards had been harassed and victimised were not isolated examples: 'Incidents involving the gradual reduction of working space, the removal of telephones and finally desks and chairs were reported from different sources and occurring, in different GEC businesses, to shop-stewards and union officials who were militant in their opposition to redundancies' (1980:262).

The same study, in three case studies of the redundancy process at Kidsgrove, Stoke-on-Trent, Liverpool (see also Spencer, 1989: 17-58) and Coventry, also shows that GEC was not over-concerned about the impact on the local communities. From the first, there was resentment at the locational loss of jobs. At Woolwich, and in many later cases, work was transferred to development regions. As Massey (1978) notes, while this weakened spatial employment differentiation, the nature of the spatial division of labour was reinforced. Massey and Meegan (1982) found that this phase of the restructuring of production involved a general pattern of regional plants being reduced to branch status while higher-level control and technical and scientific functions became concentrated in the South-East. Facing fewer employers, trade unions in the electrical industry became actively engaged in inter-area competition for the remaining jobs (Massey, 1978). At Woolwich, for example, resentment surfaced over the way that some men had trained workers in Scotland only to lose their jobs subsequently (Cowling et al, 1980:261).

GEC: management style

Despite all the resentment and resistance, GEC seemed to be one of the few successful manufacturing firms in Britain. Good early financial results in cash growth and higher profitability largely derived from the lack of competition in electrical engineering, strong demand for electronics, telecommunications and, above all, a colour television boom. Combined they contributed to the seeming infallibility of Weinstock's management style. In the 1970s turnover per UK employee rose four and a half times, suggesting a more efficient use of capital and the labour force (Williams et al, 1983:141). Since the early 1970s GEC has also accumulated substantial cash reserves, initially from asset sales of peripheral or surplus capacity. Although better known for its acquisitions, since 1970 GEC 'disposed of rather more firms than it has acquired' (Williams et al, 1983:155). Between June 1993 and June 1994 five of the eight major transactions involving GEC were sales of subsidiaries while the rest were acquisitions. In 1994, for example, 'cash at bank and in hand' stood at £1.2 billion, up £220 million on 1993 (GEC Annual Report 1994:59). GEC thus defy the traditional distinction made between finance and industrial capital. The net income derived primarily from the cash mountain as a percentage of company profits before taxation rose from around 10 per cent in 1977, 13 per cent in 1979, just under 15 percent in 1982, to nearly 19 per cent in 1994 (Williams et al, 1983:154; GEC Annual Report 1994:46).

Yet much of this success is too narrowly dependent on the criteria set by specific national accountancy conventions used by UK firms and understates other measures of manufacturing performance such as innovation or breaking new markets. Indeed the absolute primacy of financial performance is itself hazardous for judging manufacturing performance. As Williams et al (1983:175-6) argue,

> The more crucial observation is that the missed opportunities in new markets and retreats in old ones both stem more or less directly from GEC's methods of enterprise calculation, grounded in financial criteria which favour relatively short-run profitability.

Even the strong emphasis on financial performance and short-term profits has not resulted in the kind of spectacular financial success GEC are popularly renowned for. Table 8.7 shows that GEC's financial performance was relatively consistent when the seven year period 1986-92 is compared to 1981-85. GEC's return to shareholders was slightly above the average for the electronics sector as a whole and slightly below the FT All-Share average. Its average returns on equity (RoE) and the return on capital employed (RoCE) also remained fairly high in this period.

Yet when this performance is compared to the rising level of sales which accompanied the acquisition of other companies, the performance is not quite as impressive. Table 8.6 shows a steady decline in profitability as a percentage of turnover, from a peak of 13.1 per cent in 1979 falling to around 7 per cent in the 1990s.[3]

Table 8.6: Summarised sales and trading profits of GEC, 1971 to 1994
(Sales and profits in £m unadjusted for RPI)

Year	Sales	Trading profits (before interest and tax)	Profit as a % of sales
1971	924	77	8.3
1972	975	86	8.8
1973	1023	119	11.6
1974	1144	132	11.5
1975	1406	141	10.0
1976	1752	184	10.5
1977	2055	231	11.2
1978	2343	294	12.5
1979	2501	328	13.1
1980	3006	360	12.0
1981	3462	381	11.0
1982	4190	431	10.3
1983	4626	462	10.0
1984	4800	501	10.4
1985	5222	529	10.1
1986	5252	508	9.7
1987	5247	492	9.4
1988	5553	561	10.1
1989	6664	652	9.8
1990	8786	671	7.6
1991	9786	688	7.3
1992	9435	702	7.4
1993	9410	695	7.4
1994	9701	684	7.1

Sources: Cm 9867, 1986; Cm 676, 1989; Cm 2852, 1995

One widely recognised way of characterising GEC, is what Goold and Campbell (1987) term a 'Financial Control' company (FCC). FCC companies are defined by an emphasis on separate stand-alone businesses, tough budgets and short-term targets. FCCs operate in relatively stable conditions which do not demand large, long term investments. The corporate centre retains financial control and trouble-shooting functions while operational autonomy is devolved to the

[3] See also Charles Leadbetter's reports in the *Financial Times* 6,7,8 July 1992.

stand-alone business units. Each operating unit is expected to make a profit and trading between units is done on an arm's length basis. In some ways this environment comes close to Burns and Stalker's (1961) ideal for a mechanistic company. GEC's corporate structure is closer to the bureaucratic model, as Burns and Stalker would predict, although at an operational level business units are expected to find their own forms of management.

Table 8.7 GEC: Financial performance (averages)

			Total return to shareholders		
	RoCE	RoE	GEC	Electronics sector	FT all-share index
1981-1985	24%	17%	15%	14%	25%
1986-1992	22%	18%	15%	14%	16%

Source: Goold et al, 1993, p53

The role of the GEC centre, however, acts as a constraint on business management rather than encouraging managers to be innovative and develop organic forms. Each operating unit has authority for its own capital investment decisions as part of an agreed budget and also has a discretionary budget related to its size (Cm2852, 1995:44). Proposals for unbudgeted capital expenditure need to be justified to the centre and always depend on business unit managers pushing from below for a decision. Caution and discouragement on the part of the centre means that responsibility for the success of a project rests with the manager who initiated it. Caution and inertia thus become a natural managerial reflex for fear of exposing themselves to failure (Goold et al, 1987:118-9). It is worth quoting at some length the ways that Weinstock had earlier laid out the underlying philosophy of his approach to English Electric managers:

> ... [T]he real success of our new Company depends on the individual managing directors of our many product units. Our help (or lack of it) from HQ does not relieve you in the least of your responsibility for that part of the business which is in your charge ... The managing director of every operating unit is responsible to me ... You will have considerable autonomy in the running of your unit, subject to certain controls ...; these are largely financial, but monthly reports should cover everything of consequence concerning the business, including important technical matters ... It is said to be possible to maximise short-term profitability by omitting to do those things which are required for the survival of a business in the long term. It would be extremely stupid to follow such a course, particularly in industries such as those in which we participate. But that is not to say that money may be wasted in injudicious investment or recklessly conceived programmes of research. (Weinstock, 1968, quoted in Jones and Marriott, 1970:336-8).

> The restraining influence of our style only works on inferior managers. A real man [sic] rings me up and says what he wants to do anyhow. I don't treat managers like small boys. I don't need to approve their plans ... What people write down on paper does not control anything. *Budgets are just signposts in a wilderness of uncertainty.* You can't control everything through a budget, but you can control expenditure ... There is no such thing as good enough. Nothing is good enough. The question is how much better is acceptable. (Weinstock, quoted in Goold et al, 1987:238; my emphasis)

Central restraints are deliberately placed on local managers to test their resolve and commitment to investing in as yet unrealised projects. The apparent disinterest at the centre in operational matters is backed up by a detailed interest in regular reports from the units. For example, the seven criteria employed by GEC in the reporting procedures to control the financial performance of individual divisions and cost centres in the late-1960s were:

- Profit on capital employed
- Profit on sales
- Sales as a multiple of fixed assets
- Sales as a multiple of stocks
- Sales as a multiple of capital employed
- Sales per employee
- Profit per employee

(Williams et al, 1983:167)

The centre would therefore be alerted at an early stage should finical results fall below expectations. A system of mainly financial accountability and the delegation of restricted operational autonomy constrains budgetary spends to measured and justified levels. Investment programmes are thus dependent on local managers taking a visibly partisan approach to their own plans. Such exposure constitutes a considerable risk for managers should losses or failure follow and can become a source of routine conservatism and inertia typical of a mechanistic organisation.

In his turn, Weinstock cultivated government ministers and civil servants. Personal relations between Weinstock and government Ministers of either main political party were to become a

common theme as Weinstock's GEC grew in industrial importance after the AEI/EE mergers[4] (Benn, 1988:144-5; Healey,1989:503; Wilson, 1979; Cowling et al, 1980: 195, Ch. 8; Clark, 1994; Bowen, 1995). GEC also became skilled political operators. For example, in 1975 GEC donated funds to the Conservative and Liberal parties for the first time, mainly because of its opposition to proposals by the Labour government to nationalise the aircraft and shipbuilding industries (Cowling et al, 1980:253). Weinstock's political adeptness became particularly valuable when GEC attempted to break into the defence industry in a big way in the late 1980s. Lord Prior, the former Employment Secretary, became the Chairman of GEC in 1984, and the former Trade Minister, Richard Needham, joined the GEC Board in September 1995, initially as a non-executive director but destined to become head of exports.[5] Even Alan Clark, as Minister for Defence Procurement, well known for a certain haughtiness towards narrow and unseemly 'money-grubbers' and corporate careerists, saw Weinstock in a different league from 'business lightweights',

> ... I am bored blue by the company of businessmen. I have absolutely nothing in common with them. I don't like sitting around with a glass in my hand. I don't understand references to Chelsea FC. I couldn't hit a golf ball to save my life. I like only the heavy movers, people like Arnold [Weinstock] ... (Clark, 1994:246).

Management style at Ferranti

A useful contrast can be made between the GEC management style and the one operating at Ferranti before the take-over. While Goold et al (1987:145, n1) found Ferranti among the most difficult of their case studies to classify, they elected to list them under FCC. Derek Alun-Jones as the MD at the centre perceived their corporate style to be closer to Strategic Control, that is the

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[4] Tony Benn had been so impressed with the Chairman of GEC in 1968 over the AEI deal that he suggested Weinstock should be given a knighthood. Although Benn found Weinstock 'politically primitive' he was also 'agreeable, easy to work with ... I have got good relations with him and I want to build on them' (1988:144-5). This was before Benn's 'own radicalisation took shape' (Benn, 1988:xii,25).

[5] Needham's appointment to the GEC Board coincided with the government finalising new rules preventing ministers from taking up posts in the private sector where there may be a conflict of interests immediately after leaving office. These were recommended by the Nolan Committee which had been formed to improve standards in public life after a series of 'sleaze' charges had been made against ministers taking highly-paid jobs with companies they worked closely with or helped privatise when they were in office. In charge of trade promotion at the DTI, Needham made three ministerial visits to Indonesia in 1993 when BAe and GEC won a £500 million contract for Hawk jet trainers. GEC supplied thermal imaging systems and electronic warfare for the aircraft. In 1994 and 1995, Needham again visited Indonesia and GEC subsequently won an order in 1995 to upgrade Indonesian F5 fighter aircraft. Needham had earlier denied that he was even talking to GEC (*Financial Times*, *Guardian*, 4 September 1995).

centre and the business units are more involved in corporate and operational planning. At lower levels of management, however, budget controls appeared to be a more important goal than strategic targets. My findings tend to show big enough differences between GEC and Ferranti styles to suggest that classifying both under the common Financial Control heading is misleading. After the take-over in 1990, GEC were surprised at the lack of systematic control Ferranti exercised over finance; indeed Ferranti managers were positively decadent in their budgetary laxity compared to the rigour GEC managers were accustomed to. Ferranti managers soon had to adapt to a regime of financial austerity coupled with direct individual responsibility to the centre.

The ISC crisis posed a serious problem for Ferranti's management style. Tight financial controls had been imposed after the 1974 cash crisis and the government bail-out. Although they nominated the dominant style at Ferranti as that of Financial Control, this had been buttressed by what Goold and Campbell (1987:140-3) called Financial Programming (FP). The FP style allows the centre a more interventionist approach in business unit decision making, but without easing the tight financial controls. Ferranti thus allowed businesses to forecast financial performance and their medium-term financial needs every year in 3-year plans. Through this mechanism the centre, it was hoped, could guide businesses away from decisions which could lead to major cash or profit difficulties and resolve allocation demands when they exceeded central resources. Goold et al (1993:52) claim that Ferranti's management style may have contributed to its later difficulties:

> Prior to the ISC merger, Ferranti's strategies had been cautious, with its business making relatively small investments and only experimental forays into new areas ... The ISC merger aimed to improve, in one grand move, Ferranti's competitive position in world defence markets. This strategy was risky as well as bold, and Ferranti's corporate centre was not accustomed to assessing such a major commitment.

Yet the cautionary and stringent financial control style supposedly common to both Ferranti and GEC cannot adequately account for the many differences that existed between the two management styles. GEC managers tend to view the ISC crisis at Ferranti as only the most visible expression of a deeper managerial malaise:

> The problems that arose from ISC were inherent anyway and would have been exposed sooner or later. The lack of business acumen at Ferranti was well illustrated in the deal with ISC. The same deal was offered to Marconi and was instantly rejected. The 'pursuit of fear' that Ferranti felt from the designs that GEC and BAe had on them ... drove them into the arms of ISC.

> Ferranti would have been in a much better position had they co-operated with either of their British suitors much earlier. After all, DeFerranti was already on the board at GEC.

The practices which had evolved and served Ferranti well during the long-decades of expansion and protection now seemed positively archaic, particularly to managers coming in from elsewhere in the GEC organisation. For them, albeit in a highly retrospective frame of mind, the operations in Edinburgh had become far too bloated and decadent. Whether the reason for this was the fecklessly indulgent management style of the old regime or sensible developments in accord with business expectations seems to depend on the length of time managers had spent in the Ferranti organisation. Long standing GEC managers tend to be scathing:

> The root of the problem was that Ferranti was part of a free-wheeling, organically grown, technology-led community. It was an under-capitalised, overmanned, loss-maker. *No real system of cost control or accountability existed.* Ferranti was run by scientists, evaluated by scientists, on behalf of scientists. There was no team management process, only technical problems to be solved. Industrial relations were a 'moving target'. The evolution of a rigid grading system did not reward skill, initiative or endeavour. The resulting overkill in numbers reduction was therefore caused by incompetent management practices, with the tail wagging the dog at Ferranti.

In this account all the vices of the sluggish behemoth of long-standing notoriety with liberal and conservative critics of the defence industry like Galbraith and Melman, are present. In the mid-1990s, however, such critics were also looking back at the evolution of the firm from a privileged position, outside time and place. For those who passed through these times and remain rooted in these places, things looked mundane in comparison. For Ferranti managers the company had simply evolved in line with what the business demanded and where costs were less important than meeting the demands of the customer for technological excellence. From their vantage point, such peculiarities as admittedly existed were not the result of some wilful perversity on Ferranti's part but were built into the producer/customer relationship. One manager, while recognising that things could not continue in the same old way in the changed circumstances of the 1990s, fills in some of the concrete detail about the ways that the problems of supplier/customer relations, payment systems, narrow specialisation and labour hoarding were intimately related:

> The company [i.e. Ferranti] was by necessity very close to the customer. When contracts were being drawn up a milestone plan would be agreed. Instead of the firm being paid after the finished product was sold to the customer, the customer would monitor the contract at regular progress meetings. You had what was called 'sponsors' related to different products, such as

representatives of the MOD's Supply Management branch and the Services. The sponsors would arrive in Edinburgh for a couple of days for progress meetings and we actually had a small percentage built into the contract price for entertaining the product sponsors. So a lot of business would get discussed informally over a meal and a few drinks the night before the meeting and we would get to know the kind of people we were dealing with. The meeting the following day might involve some tough negotiation but *you felt that you were all basically working to the same end*: getting the very best products delivered on time, with costing worries coming further down the scale of importance. The company would of course make a profit which was more or less guaranteed when the contract was agreed. Certain factor allowances were built into the structure of the contracts costings with a final top-up agreed at the end of the contract. (emphasis added)
(Engineering manager)

This is not to suggest that workers at Ferranti were unaware of the problems. The same manager drew attention to the hazards of acquiring specific knowledge and skills without controlling adequately for costs:

In the early 1970s this system contributed to a financial crisis within the company, putting them on a credit hold with suppliers, because money would come in over a period which would not necessarily match the spend needed to pay the suppliers off and bear your in-house costs. The fundamental flaw that derived from this set up was the policy of hoarding labour and the underdiversified nature of our product base. Previously some of the functions that were around were more like a job creation scheme. These problems became fully exposed when we moved from cost plus to fixed price contracts ...

A picture emerges of a self-confirming nexus, from the MOD to the shopfloor, which conspired to create a 'degenerate capitalist firm' where management largely abrogated control of costs and the labour process.

The customer was encouraged to treat the supplier as an extension of their own activities, where technical difficulties would be resolved, rather than Ferranti behaving as a commercial outfit with distinct interests in continually improving how it does its business and the costs involved. At the middle management level, ... , costings were largely ignored in the equation of solving technical problems. This led to the problem of a lack of accountability and a tendency for effort and knowledge to become specialised and localised, confined to some few individuals. You know what they say: 'knowledge is power'.
(GEC manager)

When GEC managers arrived in Edinburgh they were determined to transform the Ferranti management style. One incoming GEC manager noted the way that the previously acquired hierarchical status of senior managers resulted in cultural aloofness:

> One of the main problems that was discovered on arriving at South Gyle was the Victorian attitudes of the senior Ferranti management. They seemed more interested in exuding an air of visible superiority over their subordinates than in managing and leading people as part of team effort.

GEC managers viewed such patrician affectations as part of the wider problem of hierarchical disdain for strict financial accountability. The laxity of cost-control bordered on the treasonous for the new managers steeped in the pecuniary practices of GEC.

Table 8.8: Ferranti: Financial performance (averages), 1981-92

			Total return to shareholders		
	RoCE	RoE	Ferranti	Electronics sector	FT all-share index
1981-1985	20%	20%	30%	14%	25%
1986-1992	3%	-18%	-21%	14%	16%

Source: Goold et al, 1993, p52

The tight financial controls at Ferranti were nowhere near as rigorous as the controls at GEC, and nor did they penetrate all levels of decision-making in the same way. Furthermore, the claim that Ferranti's strategies were 'cautious', making 'relatively small investments', may apply to the group as a whole. In Scotland, however, even after the new financial regime installed by Alun Jones in the 1970s, Ferranti continued to invest in new buildings and plant, especially the South Gyle complex, employment continued to rise and they managed to retain enough of a technological lead in avionics to be the leading contender for arguably the most prestigious radar contract in Europe. As Table 8.8 indicates, Ferranti's annual return to shareholders was higher than average for the electronics industry as a whole and, at 30 per cent, twice the level of GEC between 1981 and 1985. It is only after the ISC merger that Ferranti's financial performance deteriorates. Whatever model of management style is appended to Ferranti, the underlying problem was structural. As a medium sized company in a high tech market coming under increasingly monopolistic control in the second half of the 1980s, any possibility of maintaining company independence required desperate

measures. In any case, independent control would probably have proved to be short lived, even without ISC.

GEC: The second restructuring phase, 1988-1995

In the late 1980s GEC faced strong international competition. Goold and Campbell (1987) predicted that the emphasis on short term performance and stand-alone businesses of FCCs were becoming ill-suited to increasing global competition in markets like defence. In terms of competitive environment, FCCs performed best in stable 'battles' for market share. The competitive environment in defence markets after the mid-1980s was becoming more like that of 'fierce battles' in which a Strategic Control style was more suited. In 'fierce battle' environments intensified competition, depressed profitable opportunities and dramatic changes in the fortunes for some companies means that the centre has to decide whether it wants to pursue an ambitious 'win' strategy requiring flexible controls, a 'hold' strategy requiring tight strategic controls, or a 'retrench' strategy needing tight financial controls (Goold and Campbell, 1987:227-233).

GEC opted to protect its Financial Control management style by meeting the competitive threats of 'fierce battle' through a series of joint ventures and alliances and consolidating its presence in defence markets. Initially this seemed to be a high risk strategy, particularly with the vulnerability of large projects to cancellation. Thus GEC Avionics and GEC Computers faced job losses of 1,500 when in December 1986 the Airborne Early Warning (AEW) system for Nimrod aircraft was cancelled and the US built Boeing AWACS system ordered after technical difficulties resulted in substantial cost overruns and time delays. At a cost of £1 billion and an additional £860 million for AWAC, the AEW cancellation further damaged GEC's reputation for innovation and efficiency. Comparing GEC to a 'manufacturing white elephant', Willet (1988:167-8) argued 'One billion pounds sustaining 1,500 jobs over nine years is a very expensive employment creation scheme, which has done little for the nation's industrial or technological prestige'.

If GEC was indeed a white elephant it had a severe case of elephantiasis. It embarked on further corporate growth by a series of major take-overs between 1985 and 1995. These are outlined in Table 8.9. In non-defence sectors, GEC amalgamated its telecommunications activities with Plessey in 1988; merged its power generation, distribution and transmission and rail transport businesses with Alcatel Althsom of France in March 1989; and formed a joint venture with GE of

the USA for GEC's Consumer Goods Group (Cm 2852, 1995:42). Williams et al (1990:469).recently summarised GEC's overall approach,

> GEC is becoming a rentier capitalist firm whose profits increasingly come from short term investment and shareholdings in electrical businesses which somebody else manages. GEC's remaining direct responsibility for manufacturing is increasingly confined to defence contracting where the profitability of development and production is guaranteed ...

Table 8.9 Major acquisitions and alliances involving GEC, 1985 -1995

Year	Company	Products	Status
1985	British Shipbuilders-Yarrow	Warships	Take-over
1988	Plessey (GPT)	Telecommunications	50:50 Joint venture
1989	Alcatel Althsom (GEC-Althsom)	Power engineering, rail transport	50:50 Joint venture
1989	General Electric (US)	Consumer goods group	50:50 Joint venture
1990	Plessey	Aerospace, avionics, naval systems, electronic systems, semiconductors	GEC 60: Siemens 40 Take-over
1990	Ferranti	Defence electronics, radar, avionics	Take-over
1992	Ferranti	Dynamics division	Take-over
1993	Ferranti	Defence systems integration division	Take-over
1995	VSEL	Warshipbuilder	Take-over

In the defence sector, the Clyde warshipbuilder, Yarrow, was acquired from British Shipbuilders in 1985; in alliance with Siemens of Germany, GEC took over Plessey in March 1990 after the Monopolies and Mergers Commission prevented an earlier single bid by GEC in 1985; acquired FDSL in 1990 and later acquired several other Ferranti businesses, including Ferranti Defence Systems Integration and Ferranti's 50 per cent shareholding in Ferranti Thomson Sonar Systems, and took over several small US-based defence firms; and acquired the warshipbuilder, VSEL, in

June 1995. At some stage, GEC is widely expected to acquire or merge with the other UK defence giant, British Aerospace (BAe), giving it a national monopoly in a broad range of UK defence markets.

By the mid-1980s GEC already had a virtual monopoly in some areas of military radar, such as army tracking radar and naval tracking radar. When Plessey's activities were added the merged firm dominated most other areas of military radar. With Ferranti the only major competitor in military airborne radar, GEC still controlled just over half of the £150 million annual sales between 1984 and 1988. Through the acquisitions of Plessey and FDSL, GEC's main defence division, Marconi, was strengthened considerably. In 1989 GEC received over three times the amount of MOD spending as Plessey, who in turn received about 50 per cent more than Ferranti, the next largest electronics company. Combined the two companies took around three-quarters of the total value of MOD spending with major electronics companies. The greater part of this expenditure with GEC and Plessey was issued on a non-competitive basis (Cm 676, 1989:23, 24). While one commentator saw the joint venture to take-over Plessey as evidence that 'the one time crown jewel of British industry seems doomed to become an offshoot of Siemens' (Riley, 1991, in Dunne and Smith, 1992:100), Goold, et al (1993) noted the tension in the contrasting management styles of GEC's financial control and short-term performance and Siemens emphasis on long-term research and cross-subsidy support for even poorly-performing subsidiaries.

Ferranti at the time of the take-over

Against the background of an incoherent competition and merger policy and GEC's determination to become the UK's national champion in defence, the take-over of Ferranti can be better understood. Whatever happened to the government's competition policy? Nicholas Ridley, Secretary of State for Trade and Industry, decided against referring the take-over of Ferranti to the Monopolies and Mergers Commission because competition issues were outweighed by 'public interest' considerations (*Financial Times*, 10 February 1990). The public interest was represented by the strategic importance of the technological capabilities of Ferranti and the commitment of the government to EFA. In fact, here the government were directly responsible for brokering the take-over and had no intention of submitting GEC to an MMC investigation. The international context of competition was beginning to have a wider resonance than just a few years earlier. In the emerging European arms industry pan-national consortia were increasingly becoming permanent

collaborations, thus reducing the need for the MOD to maintain domestic competition between equipment suppliers (Campbell, 1990). While a take-over gave GEC a monopoly in airborne radar design and manufacture, the MOD could claim that its competition policy was unaffected by the creation of a domestic monopoly. Although the UK government was at the vanguard of the liberal restructuring of weapons procurement, as the case study of the Ferranti and ECR-90 makes clear defence electronics was still informed, above all, by the strategic and technological priorities of the nation-state.

Ferranti International officially sold the Edinburgh-based FDSL and part of the operation in Italy to GEC for £310 million on 2nd March 1990. The news that Ferranti had been chosen for the £2 billion contract to design the EFA radar had been leaked on 22 January and GEC submitted a bid to acquire FDSL the very next day (*Financial Times*, 23, 24 January 1990; *The Economist*, 1990). GEC's attitude to the take-over was summarised by one manager:

> The rule that is applied by GEC when making an acquisition is whether the sum of the parts of the targeted group make it worthwhile. The bits that are outside the core focus of activities can be disposed of later. In the case of Ferranti the EFA contract made it extremely attractive and complemented GEC's existing activities in the avionics field.

ECR-90 ensured that Ferranti would be within GEC's core activities. The new company became a subsidiary of GEC Marconi and was renamed GEC Ferranti Defence Systems Limited (GFDSL).

The take-over of Ferranti did not happen only on the basis of Ferranti's poor financial credibility but fits within an overall pattern of restructuring in the defence industry. Taking on size is a key way for defence companies to retrench and consolidate their activities:

> What has been happening to Ferranti is not exceptional or different from the experiences of the rest of the industry in the UK or globally. It cannot be looked at as one discrete item but as a point in a set of events. Independent, stand alone companies have now gone for good in the defence industry. The fact is that such firms need to become part of global oligopolies in the defence market or they will perish. Looked at this way, Ferranti was only one molecule in a wider reconfiguration of the industry. Standing alone, it would have been unable to fund the investment needed to keep them in the defence technology game and the GEC merger would have happened anyway.
> (GEC manager)

In the light of government policies of competition, privatisation and fixed-price contracts, designed to pass on the risks and costs of programmes to private capital, the need to commit major investment to research and development was emphasised by a number of managers as a crucial factor in the take-over. GEC managers bemoaned the lack of institutional support for the UK defence industry when it comes to international competition, which they saw as a further reason for medium-sized firms to come under the umbrella of GEC.

> The global market in arms equipment is now saturated with choice. The export-driven post-Cold War environment has led to global market entry into previously restricted areas by new producers, fully backed by their governments. The UK government's notion of a level playing field in the market is misconceived. The UK license approval system and Export Credit policies prevent contracts being won in particular places such as Argentina, because of the political legacy of the Falklands war, which was fought over ten years ago, and inflation, debt-riddled countries like Brazil. In the latter case, GEC was working with a German firm for a contract in Brazil, who had backing in terms of export credits and licenses from their government within days, while the UK government dithered for months. Only the timely cash support of GEC and certain financial institutions helped the firm to participate in the collaboration on the contract. The UK government, the Board of Trade, MOD and the Foreign Office do not offer British manufacturers the same kind of institutional support as that available from the French or German governments. As a result of this concern with an idealised level playing field, we tend to play short-handed when it comes to competition.

In the face of the changed procurement conditions and the ISC scandal Ferranti were thus seriously under-capitalised.

> In the past capital investments for developing new systems were always government-led. Commercial customers, unlike defence customers, do not pay for product development, at least not directly (they usually pass on the cost of development onto the customers by building it in to the final price of the product). This kind of government sponsorship is now no longer true for defence companies. They now have to find much of the resources for staying in the game from their own pockets. Therefore firms need the protection and support of larger and larger units which really ends up undermining the competition ethos which led to the withdrawal of government support in the first place. This is part of the logic of the GEC take-over of Ferranti.
> (GEC manager)

> With fixed price contracts the lowest bidder may not be the best bid. Other factors than cost alone enter into bid packages such as technology and the corporate ability to absorb risk and costs. GEC provided Ferranti with the latter. The risk involved could mean financial ruin to an under-capitalised firm so mergers and take-overs become the means of protection. This also puts fewer firms in the position of competing for the prime contracts. There was a logic to the

take-over. Smiths and Racal are also in the running to follow Ferranti and it is only a matter of time before somebody makes a successful bid for them ... Now even foreign firms such as Thomson in France are interested in partnerships on projects and are making inroads into British industry.
(GEC manager)

A further factor besides possession of the ECR 90 contract made Ferranti particularly attractive to GEC: its technological capabilities. One manager noted the way that the 'food chain' of adding value to equipment operated in conditions of monopoly control or low competition:

> If you look at military aircraft there is only now one manufacturer, BAe. If you look at submarine construction there is only one company, VSEL. If you look at tanks there is only one manufacturer, Vickers. So the inescapable conclusion must be that the government's competition policy is a myth, at least within Britain. Yet because the defence market is based on political decision making, government's will not make these kind of purchases from foreign suppliers. The defence market is all about politics at the end of the day. Levene's two successors took competition policy further than even he had intended and what has happened is that some firms had to be swallowed up in the food chain. You are effectively left with no competition among platform manufacturers, which makes them even more attractive to systems integrators. This is part of 'the food chain' whereby the value of the systems in weapons equipment becomes a greater proportion overall than the platforms that they are housed in. Around 40 percent of the value of EFA is embodied in the radar, for example. So the people who are pre-eminent in defence industries are the systems integration people with traditional metal-bashing people contributing less value and are more readily subsumed by systems-led conglomerates.

Conclusion

This, then, is the context of the GEC take-over of Ferranti in early 1990. GEC adapted its traditional corporate strategy of growth-through-acquisition to the defence market just at a time in the 1980s when the nature of arms production was changing; the industry had largely passed into private hands, it was beginning to move beyond national boundaries in Europe and concentrated on an increasingly monopolistic scale. This process was encouraged by a policy climate involving privatisation and marketised arms-length procurement, governmental brokering of transnational collaborations and export drives, and a disinclination for government to explicitly shape the national defence industry, whether through the merger process, public ownership and control or the planning of future industrial capabilities.

For Ferranti, released from public control in 1980, the promises of marketised militarism turned especially sour with the ISC debacle. Having initially avoided a GEC take-over and protected for a further two years by the restricted covenant, Ferranti managers were all too aware of the vulnerability of medium-sized defence electronics firms and the attractions they held for aspirant defence giants like GEC. The ISC deal, premised on the demands of accumulation to expand market reach, seemed to offer a sufficient size to replace state bail-out as a way of warding off the unwanted attentions of GEC. Company independence at all costs was repeatedly held out by the Ferranti management and the Scottish lobby as coterminous with the interests of Ferranti workers in Scotland. The alternative to this, it was feared, would have been rationalisation, mass redundancies and closure of the Scottish plants. GEC denials were deemed worthless in the light of its reputation for rationalisation. Until the scale of the financial calamity that was to befall Ferranti became public knowledge, company independence rested on securing the radar contract for EFA. The ISC scandal very nearly put paid to all that: financially Ferranti was in tatters; the EFA contract, on which so much hinged, was put in serious jeopardy; and the workforce in Edinburgh seemed, yet again, to be at the mercy of external forces. By now the Scottish lobby was a pale shadow of its former self. By the late 1980s it no longer commanded anything like the political muscle it exercised during the 1974 bail-out or, to a lesser extent, when it deflected both the government and GEC from a single sale of the NEB shares in 1980. The resources of technocratic militarism, always important for the arms industry in Scotland, seemed to be a spent force.

Chapter 9

Ferranti in the 1990s

This chapter will deal with the restructuring in Edinburgh in the first half of the 1990s. First, how the restructuring affected senior and middle management will be discussed. Some of the contrasts between GEC and Ferranti approaches to management will also be raised. Second, some of the main processes underlying the changing contours of the workforce will be described. Third, the character of the trade union response is addressed. Finally, a tentative discussion of the relatively peaceful nature of this intensive burst of rapid change over a short period will be undertaken.

Cost over technology: Changing managerial styles

This section will discuss the form of the restructuring of Ferranti's Edinburgh operations. One of the most significant shifts has been in the management style. A move has occurred under GEC to embed cost-consciousness more centrally in the routines of management. Although this was already discernible in certain aspects before 1990, under GEC it penetrates through every pore of its activities in a way that it never did under Ferranti. How managers relate to each other and to the people they manage has been re-shaped by the new cost ethos.

After the take-over GEC were determined to transform the Ferranti management style. Central to the GEC approach was to instate money at the centre of all managerial considerations. First of all, this meant breaking middle managers out of their 'technology-centred torpor'. As we have seen, it was commonly observed that GEC delegate operational autonomy to divisions and business units. Managers from GEC frequently repeated this claim. One GEC manager saw the restoration of the managerial prerogative like this:

> The really big change that has happened under GEC is that, because middle managers are recognised as being the really important people, they are now finding themselves with more authority to make decisions, plan and lead. This results in increased levels of commitment all round, from the staff who can see a responsive and authoritative middle management; from middle managers who relish the creative challenge of responsibility for costs and performance; and senior managers who have to agree planned targets which are achievable if worked for. GEC insists on simple things like accountability and budget targets being met. Operationally we are not really constrained in the way we do things so long as the basics are taken care of.

The basics, of course, refer to the profitability of each business unit. The result has been a purge on spending. Exhortations to control costs are frequently made and any relationship involving cash transactions is closely monitored. This excerpt from a leaked memo to the *Scotsman* (24 August 1991) from the Managing Director to senior managers typifies the GEC approach:

> ... orders and sales figures for the first four months of the year are considerably below budget. The operational effectiveness of the company is under continual review but the present performance when combined with the latest trading forecast to the year end indicate that the cost of running the business must be reduced. In the light of this, managers have been instructed to carry out a complete review of their operations.

As one interviewee put it, 'Under GEC the pressures to tighten up on costs are unremitting. There is a continuing, systematic effort to nibble at costs'. However, the usual GEC claims that increased responsibility on management to control costs was accompanied by autonomy and discretion on how to do so was disputed by some Ferranti managers. With tight controls on cost, even the power of senior managers, which was virtually absolute under Ferranti, was restricted :

> An added strain is placed on senior managers because it is their signature that goes on everything and if there is any comeback about spending then they will take the blame. [Under Ferranti, the] Deputy MD ... was responsible for signing around 400 cheques per month. [In contrast] GEC will not use a facsimile signature because it is open to abuse so each cheque has to be individually signed by hand ... Previously the MD could basically decide everything. Now discretion has been curtailed because of the risk of auditors uncovering discrepancies. GEC take the view that everybody is a crook wanting to rob them.
> (Ferranti manager)

The GEC approach, however, may not quite have had the desired effect of restoring managerial prerogatives and initiative; indeed many managers, especially long-standing Ferranti ones, may have become ultra-cautious.

> At first Ferranti middle managers were the most fearful for their positions because of the practices of past decades where people and money were thrown at a problem and remained there after it was solved. It is of little surprise that people were remote at first. They were a bit scared, resentful and uncomfortable because they knew that change had to come and inevitably jobs had to go.
> (GEC manager)

Gradually GEC began to import their own people into middle management tiers, migrating from Kent or Milton Keynes. This seemed to be particularly true for financial and accounting activities, although some important developmental projects also began to be dominated by GEC engineers. According to one source, 'in some offices only English was spoken'. One trade unionist, who felt some sympathy for the predicament management were placed in, recalls one of the forms this took:

> There was a major change in policy within the company and you did feel sorry for the management. There was a saying within trade union circles that if you think GEC treat the unions badly, they treat the management a helluva lot worse ... Management were under total fear at the time and with the placing of moles throughout the company, and GEC appointees within the company, especially within the financial and accounting side of it, it became quite clear that management were scared of the day they had not seen ... [M]anagement were so scared of the GEC team that they were scared to criticise. They seemed to attempt to introduce Japanese management techniques ... and again it became quite clear that when individuals within the quality circles or team briefs asked questions from the management, the management at top level ... failed to have an understanding of what had been said at management meetings and this was because of the fear factor - a. They did not want to indicate to the top management that they [did not] know what they were talking about and b. they did not feel that the working relationship was there for them to consult ...
> (Union convener)

Communications between senior and middle management suffered in this climate of fear. A couple of examples, perhaps apocryphal, will show how communications were viewed by the recipients further down the hierarchy.

> The phrase at that time was ... the old war one where, during the battle, the general had turned round and said to his sidekick, 'Send reinforcements. We are going to advance', but by the time it gets down to the footsoldiers, it ended up saying, 'Send three and fourpence. We are going to a dance' ... [A]nother true one I can recall is the laser gyroscopes, when they were telling us how well we had performed, and the management had told us that they had tested it on a Land Rover, and again, I had to point out to them that it was an Andover - it was an aeroplane it had been tested on.
> (Union convener)

Passing distorted communications down the line seems to have stemmed from the fact that the autonomy of lower management and supervisory grades was largely fictitious. The technical backgrounds of existing managerial tiers ill-prepared them for such functions.

> At the team briefs, it was a typed message from the top which said to managers that on no account were they to read out this typed message, they were to put it into their own words and their own style. Obviously the management did not have the training to be managers.

> They were engineers and that was one of the problems with the company. Engineers and scientists, to get on, had to become managers rather than good engineers and they had to start having people below them and having less engineering activities without getting any training to be managers.
> (Union convener)

Obedience to the budget target thus became a surer and safer measure of managerial competence. There was already an awareness of the centrality of costs for GEC among Ferranti managers. The customer/producer relationship has shifted closer to being primarily a cash relationship. A production manager said,

> The driving force now is to get the job done as cheaply and quickly as possible. Delivery on time is sales-driven. The 'drop dead date' for sales is more important than the customer 'drop dead date'. It is sales that brings money in and so it is of over-riding importance.

The initial uncertainty of middle management under GEC rule was reinforced by the removal of several senior managers, culminating in the departure of the Managing Director, Ron Dunn in 1993. Ron Dunn was a creature of Ferranti. He had started with Ferranti thirty years earlier in 1962 as an apprentice and was the personal embodiment of the possibilities for making it to the top within the company. Despite the recent success in winning a £20 million contract for EFA laser warning system, safeguarding 100 jobs, Dunn's position became untenable when GEC-Ferranti's budget was rejected for the forthcoming year by Derek Dickinson, Chief Executive of GEC Marconi. Serious losses reportedly wiped out profits on the £300 million ECR90 design and development contract because Ferranti's original bid seriously underestimated the work entailed. When the extent of the cost overrun was revealed to the centre, GEC moved to oust Dunn (*Scotsman* 24 March 1993). Two other senior managers, the head of the radar services division and the head of materials purchasing, were also removed around the same time as Ron Dunn (*Scotland on Sunday*, 2 May 1993).

This has had the desired salutary effect across management. A leading trade unionist concluded that Dunn's removal sent 'a clear message to management at all levels that if Arnie [Weinstock] could come in and take out the Managing Director, he could come in and take out any manager'. The cash juggernaut now being driven through the company was increasingly steered by GEC personnel. As one said, 'Now that there is a fairly widespread use of GEC people at senior management level this [cost-driven] philosophy is in the process of being better understood across the Edinburgh factories'. Only with this infusion of GEC

practitioners could GEC be confident that the cash-driver would successfully replace the technology-driver within the firm.

The stress originally placed upon the control of innovation by Ferranti resulted in expansive capacity to reproduce any of the stages in the conception to execution process of product development and manufacture. Even under this regime, where larger batches were involved these were often supplied by outside contractors once the initial development work was done in-house. For example, sheet metal work was usually contracted out where bulk orders were concerned. However, in the increasingly internationalised market for avionics, particularly from US producers enjoying economies of scale, competing on the basis of technological sophistication alone is insufficient. Although direct control over the labour process is forsaken, sub-contracting has the advantage of deflecting responsibility for delivery, quality and cost onto the contractors. In the new order an austere cost regime meant getting inputs as cheaply as possible.

> Because the US has the advantage of volume production runs we need to pay people here less to compete against this disadvantage of scale. One alternative is sub-contracting. For example, we used to support a huge machine shop when we could get the same parts machined for less elsewhere because they wouldn't have the same overhead costs to bear. In printed circuit boards [PCB], we used to employ dedicated teams to keep abreast of the latest developments in PCB capabilities. But we were not PCB manufacturers. So if there were half a dozen PCB innovators we would replicate all their work to make prototypes for whatever equipment we were developing to find out which was most suitable and second-guess which would be the most successful in the marketplace. Now we concentrate on our core business.
> (Senior manager)

The move to contracting-out has affected ancillary and manufacturing activities most severely but high-tech activities were also affected. The maintenance department has been reduced to a skeletal force, with most maintenance functions now done by contractors. The increasing sophistication and cheapening of civil technologies, even of highly specialised components, meant that an increasing range of these could now be bought in (Molas and Walker, 1992; Walker and Gummett, 1989). Complete optical assemblies, for example, could be procured from firms in France and Canada where previously individual components would have been purchased externally and assembled in-house. Even customised printed circuit boards required

at the developmental stage of a project can be contracted out because of the growing sophistication and over-capacity of sources in the external market.[1]

As part of this general approach, GEC installed an extensive programme of cost cutting and cost-control techniques. A senior manager gave the following list of some of the areas where costs have been 'nibbled':

> GEC brought in their own energy and insurance advisors. Overhead costs have since been cut by around 25 per cent. Some of the sources of these savings are:
>
> i. Insurance The cost savings in insurance have been considerable because we were able to take advantage of the insurance terms that a group of GEC's size is able to get.
>
> ii. Energy The water bill has been reduced thanks to implementing a series of small modifications, such as moving from the toilets flushing routinely after a time lapse they now only flush after X amount of usage. Fuel costs have also been cut considerably. Our coal fire boiler was converted to gas which is much cheaper to run. At the front entrances to buildings double doors have been installed to protect against cold blasts getting in to the site or heat escaping out when doors are opened.
>
> iii. Sub-contracts We used to run a garage to maintain our fleet of vehicles; now we have a contract with a commercial garage. The same could be said of maintenance. The maintenance department was reduced to emergency staff consisting of a few plumbers and electricians. The maintenance contract is strictly enforced for value. Some things have been retained such as security and subsidised canteens, although even here routine building security is provided by a security firm, Group 4, and the canteen subsidy has remained constant or fallen in real terms. The gardening costs have also been cut by sub-contracting.
>
> iv Overtime Overtime is viewed as expensive and wasteful and the levels have been reduced accordingly. This is not always a good measure since it can be a cheaper option than employing extra full time people with all the extra costs that entails for National Insurance, pensions, sick, holidays and so on.
>
> v. Marketing expenditure has also been cut. Newspapers and advertising expenses have been tightened up. We reviewed the range of industry magazines we advertise in and the ones which we have a subscription for.
>
> vi. The 3T's are strictly controlled - 1. time-keeping; 2. travel; 3. telephones. Senior managers have stopped travelling first class. Every telephone had a label on it with 'Call after 1pm' to remind callers of the cheap rate, although this is no longer the case.

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[1] For example, Hughes Microelectronics Europa in conjunction with one of its (unnamed) Scottish customers, who produce boards for high reliability military grade applications, developed a wavesoldering process for producing PCBs that can operate at up to temperatures of 170°C - 30% higher than standard high temperature assemblies - using conventional production equipment and materials (*Electronic Production*, February 1997: 5).

vii. Purchasing, for instance when resistors are being bought in there is a system of combined or bulk buying through centralised purchasing and receiving stores. Local model shops were centralised to reduce the overheads.

viii. Physical use of space has been rationalised. Robertson Avenue, Telford House, Bellesk have been closed down. There has been a need for the space occupied to correspond to the reduced numbers on the site. Clean room space was cut by consolidating more activities in the same vicinity.

ix. Tiers of management have been reduced although much more remains to be done.

If, because of the demand for high quality inputs and in-house capabilities, the backward linkages into the local economy were already weak under Ferranti then they were further weakened under GEC. Despite GEC's policy of vertical disintegration, local suppliers do not seem to have benefited from the increased use of out-sourcing. Although public figures are not released by GEC, the impression given is that with the increasing scope for global sourcing, particularly from civil industry, if anything GEC have reduced their supplies from local sources. Doubts remain among GEC managers over the capabilities of local suppliers to meet the demand for complex, high-quality components to internationally determined levels of cost and delivery times. In terms of a preferential policy for Scottish suppliers, only those suppliers that can meet demanding criteria will be considered:

> The nature of the work done here means that very specialised types of components are needed. My impression is that local suppliers cannot deliver in all respects. Our supplies reach us from a range of sources near and far. We cannot afford to be isolated or parochial about the business we get from the MOD.

GEC managers complained that local suppliers fail to orientate their marketing on what they can offer and become over-dependent on prime contractor support. GMav have thus moved to a 'preferred supplier' system when purchasing components and subassembled units. Assistance has also been given on project management and GMav sometimes covered one-off development costs. When drawing up their spend plans for the next one or five years preferred suppliers were invited in 'as partners, so that they can tell us which aspects of the work they would like to be involved in and where they might need project or investment support from us'

.

Another way of making costs visible to the producer is GEC's amoeba approach to stand alone business units: as soon as divisions are identified as too unwieldy break them up into smaller single units. This played a central part in the reorganisation of the Edinburgh factories.

To begin with GEC concentrated all its defence avionics activities within a single company, which was further sub-divided into product-based divisions. In an attempt to secure a new corporate identity GEC Avionics, GEC Ferranti, GEC Sensors and GEC Aerospace were brought together under one umbrella. With the formation of the new company, GEC Marconi Avionics Ltd (GMav), GEC created the biggest avionics company in Europe. GMav's order book worth some £1.5 billion, annual turnover of £650 million and 12,000 employees comprised an important part of GEC's overall £9 billion turnover and 150,000 employees worldwide (GMav, 1993).

The reorganisation removed the Ferranti name from Edinburgh for the first time in fifty years. Edinburgh was initially split into four divisions, controlled on a day-to-day basis locally but responsible to the GMav head office in Rochester, Kent. These divisions were Displays Division at South Gyle, Radar Systems Division at Crewe Toll, Navigation and Electro-optics Systems Division (NESD) at Silverknowes and the Support Division at South Gyle. Their place in the GEC organisational structure is given in Figure 9.1.

From being the undisputed core of the old Ferranti operations, exercising almost complete management autonomy, Edinburgh was now at the very bottom of the corporate hierarchy of a major conglomerate. Edinburgh became three-times removed from GEC HQ at Stanhope Gate. Coming directly under GEC-Marconi Avionics at Rochester, who were responsible to GEC-Marconi HQ at Stanmore, who in their turn reported to Stanhope Gate, Edinburgh seemed to be getting pushed further from the main decision-making centres. The 1993 reorganisation not surprisingly created alarm in Scotland. Gavin Strang, Labour MP for Edinburgh East and chair of the Labour MP's Marconi group, was therefore less reassured than Ron Dunn about the implications of the reorganisation,

> I am concerned there could be a long-term threat to employment here. At the end of the day we need to have as many top decision making centres in Scotland as possible. The more top people there are based in Scotland the more likely we are of seeing expansion. Therefore I very much regret the fact GEC have not taken the opportunity to make the headquarters of this new company in Edinburgh (in *Evening News* 8 January 1993).

If it seemed anomalous in the 1990s to bemoan the choking-off of expansion for a defence firm, Strang reflected a wider unease about the relationship between the loss of decision-making functions and falling employment levels in Scotland.

Figure 9.1 Location of Edinburgh plants in the GEC-Marconi Avionics reporting structure

POSITION	LOCATION	FUNCTION
Top	Stanhope Gate, London	Overall HQ for GEC
Second	Stanmore, Middlesex	Overall HQ for GEC-Marconi
Third	Rochester, Kent	Overall HQ for GEC-Marconi Avionics
Bottom	Edinburgh	GEC Marconi Avionics · Support Division, South Gyle · Radar Division, Crewe Toll Display Division, South Gyle · Navigation & Electro-optic Systems Division, Silverknowes*

* In 1995, NESD came under GEC-Marconi Radar and Defence Systems, also based at Stanmore, Middlesex

A long-standing trade unionist noted the way that divisionalisation reinforced the ascendancy of cost considerations,

> The most important change since GEC arrived has been divisionalisation. This has intensified the pervasiveness of the accountancy-driven nature of the firm. GEC permanently lean on costs, with the sole criteria being whether people or things can be got cheaper elsewhere. Individual divisions are now responsible for their own budgets. GEC have a rigid and ruthless attitude to controlling costs. Although they have centralised controls on cash, operational autonomy within strictly defined financial limits is the way that they work. There is an ongoing attempt to match Marconi structures to revised ideas about prospects in the market.

The main idea is to push responsibility and control for financial performance as far as possible from the centre. Each division has an arms length relationship to each other in an attempt to replicate market conditions *within* the organisation. The planning of investments and work flows should be determined locally according to strict financial criteria.

> GEC allows a terrific amount of autonomy and discretion in how its plants are operated. The only constraints are meeting budgetary targets once they are agreed at the centre. This means that we can generate our investments locally or plan them locally. If the planning is done properly the centre will rarely turn down a request for additional funding.
> (GEC manager)

This represented a major shift away from the previous Ferranti style. From a relaxed system for regulating costs, large inventories of stock and elaborate co-ordination of multi-site activities, individual managers became visible suddenly for tight budgets and contract monitoring within a bounded area of activity.

> After they took out Ron Dunn, they decided that they would do away with that whole management structure, so they took out that whole team and divisionalised the company. Yet there was a growing awareness within the company that it was now cost centre-driven and it was direct versus indirect [costs]. I mean these were all new terms to a company which had been cost plus. They would find themselves having to get a cost, a charge number for anything. They could not get a pen to write on without one.
> (Union convener)

> Previously jobs were booked on the same charges regardless of the site it was being done at. Now with divisionalisation each site has a charge for its part of any job and is only responsible for maintaining its sales target. In the last month before the end of the financial year there is a massive drive for output needed for sales. Output is now being monitored on a monthly basis in an attempt to flatten out the peaks and troughs and so preventing or at least alleviating the last minute flurry.
> (Chief production engineer)

Yet it is far from clear how efficient divisionalisation has been for regulating costs or ironing out work flows. In the solving of problems about making costs transparent and individual centres financially responsible and accountable, other problems were created. Many respondents noted the way that overall costs have risen through the increased duplication of facilities and activities. Management were also concerned about activities in Edinburgh being conjoined to other centres, over whose performance they had little control, and that the trade unions may be in a position to take advantage of a divided management structure.

> The setting up of GMav meant that our overall costs have gone up because Rochester was less efficient. More recently, the centralisation of activity is being reversed with some duplication involved in decentralisation and independence in that each division has to stand alone and therefore requires their own devolved Personnel team, stores and despatch and so on. GMav wants to devolve other areas like finance but there are problems about diluting expertise in specialist areas like arranging financial cover for foreign currency transactions. Each division will now need a specialist in export/import license regulations and procedures but this again is a highly specialised capability. The other danger is that the more autonomous the divisions become the easier it would be for the employees to take advantage of divisional differences and fears.
> (Ferranti manager)

> The stores have also been decentralised, duplicating spares and stocks where before the central store at Shore Road would have covered all the Edinburgh sites. To keep centralised stores takes a fair bit of organisation and money gets tied up in common stock which may not be needed for some time, although savings can be made in bulk buying and co-ordinating orders from suppliers. With decentralised stores responsibility for the costs of stockholding has to be borne by the division and does not evaporate into the wider organisation.
> (GEC manager)

But one of the outcomes of divisionalisation has been an increase in bureaucracy and a slowdown in decision-making.

> There are now more rules and procedures to be followed under GEC than there ever was under Ferranti. This is mainly a function of the scale of GEC's operations where accountability at all levels is necessary. GEC is a bureaucratically-run organisation which causes certain inefficiencies ... The speed of decision making is now much slower because of the bureaucracy. The division in Edinburgh now reports to GMav (Rochester), who in turn report to GEC Marconi (Stanmore), who in turn reports to GEC plc HQ.
> (Union convener)

> I would say that decision making has slowed up. If we want clearance or advice we have to go through Stanmore which takes time. You also have to spend time pushing for attention and getting your problem addressed at the highest level.
> (Personnel manager)

In Edinburgh there was widespread concern that reorganisation would culminate in the relegation or closure of the Edinburgh activities. Just weeks before he was fired, Dunn had been appointed Deputy Chairman of GMav and reassuringly said, 'There is no plan to relocate work or activities, the new organisation being primarily aimed at optimising the management of the businesses in a highly competitive international market' (*Evening News* 8 January 1993).

A further effect of divisionalisation has been to increase the number of layers between the locally-based units and the final decision-making centres. Each separate company within GEC-Marconi, such as GMav, now has its own internal structure within which the divisions report. Organisationally, Edinburgh was subordinate to Rochester, while the management structure locally was becoming increasingly GECified: managers were parachuted in and initially stood out because of their accents and/or outlook and attitude, which existing management were required to ape. In the process of adapting to the new conditions, Ferranti managers experienced a diminishing authority and control over their affairs and there may

well be less sense of local ownership or commitment to policies emanating from beyond Edinburgh. One Ferranti manager, still hoping to be promoted further, said that he has had 'to change something of my approach to suit the new circumstances; you have to bend with the wind or you will get broken' .

The social contours of restructuring

The redundancy process

By the time of the reorganisation, the threat of redundancy had become commonplace. Between November 1989 and June 1995, there were nine major redundancy exercises. With only very selective recruitment taking place in the first half of the 1990s, the size of the workforce was halved from around 6,800 to nearer 3,000. For GEC, this was a necessary consequence of fitting the company to the rigours of the emerging defence market.

In Scotland, GEC were widely blamed for the scale of the jobs being lost. However, the first three rounds of job losses took place *before* GEC took over. Indeed the first cuts took place before the ISC scandal became public knowledge. On 25 August 1989 Ferranti announced the cancellation of the current financial plan and a reduction in staff levels of 400 after an 18 per cent fall in pre-tax profits and production targets failing to be met. The 400 jobs would go as a result of 'natural wastage', i.e. the non-replacement of retirals and leavers. A *Socialist Worker* leaflet, 'Profits at £87 million - NO JOB LOSSES', was one of the first public sources to argue that the real problem lay with the financial arrangements entered into with ISC. Two ex-ISC Directors had only recently left the Ferranti board 'to pursue other interests' (Ferranti, 1993:68) taking the assets of ISC Technologies Inc with them. The annulment of the financial plan took place even though profits increased from £78.9 million to £87 million. It was further argued that production targets had been artificially inflated. Union officials accepted the criteria of 'natural wastage' but warned that they would resist compulsory redundancies. A similar tack was taken when four hundred redundancies were announced in November 1989 'due to declining sales'. Again this mainly affected the over-60 year olds and were realised through early retirements. The numbers were reduced to 180, who left with a relatively generous severance and pension package, maintained as it would have been had they retired at the usual time. The package consisted of: statutory redundancy plus a tax free service payment plus 1 months wage plus up to 12 weeks pay in lieu of notice.

The trade unions co-operated with these redundancies since they were to be done on a voluntary and early retirement basis, although Ken Gill, President of MSF, warned that the union would 'oppose resolutely any attempt to impose compulsory redundancies' (*Scotsman* 11 November 1989). The next round came sooner than expected in February 1990, after it was known that GEC would be taking over. Again, around 120-150 volunteers got roughly the same package as the early retirals. Targeting older workers at this stage had the effect of significantly reducing the age profile of the workforce.

With the arrival of GEC in March 1990 it was anticipated that the number of redundancies would increase. In April, Managing Director Ron Dunn, (now nicknamed 'Ron-Dunndancy' by the workforce), made it clear that further cuts were to be expected, 'We are in a planning process which will probably result in some sort of cutback, but where and when that will come I don't yet know' (Reid, 1990). The first redundancy announcement under GEC came only two months later on 18 June 1990. Some 550 jobs were to be lost. The press release said, 'The cancellation of a major overseas order and increased competition for orders in the defence market-place has required a review of the business and its organisation. The result of the review is a need to reduce manning levels with, regrettably, the proposed loss of up to 550 jobs at the Edinburgh units' (*GFDSL...NEWSFLASH*, 18 June 1990).

Discontent among the workforce increased with the way that the redundancy process was handled by GEC. Immediately before the redundancy announcement, Ferranti employees were shown a company promotional video, 'We're a Success', which emphasised future prospects in glowing terms. Initially, around 100 workers volunteered for redundancy and it was made clear that the rest would be composed of compulsory redundancies. A mass meeting of 1,200 AEU and EETPU members voted to ballot for industrial action if the threat of compulsory redundancies was not withdrawn (*Socialist Worker* 30 June 1990). A further mass meeting on 20 July 1990, this time involving 3,000 MSF, AEU and EETPU members, again voted to ballot for strike action. The unions complained that the company had failed to observe consultation procedures by approaching individuals directly to take redundancy before the unions had been advised of who was on the redundancy list. Time scales were also accelerated by GEC, leaving insufficient time for the unions to propose alternative labour use through redeployment and retraining and maximise the number of voluntary redundancies.

Doug Rooney, Divisional Officer of the AEU, accused GEC of 'importing an alien industrial relations culture' into Ferranti and eroding the autonomy of local managers to make decisions. 'Quite frankly, the entire community in the Edinburgh factory is not proud to be GEC employees' (*The Scotsman*, 18 July 1990). Before the ballot could be conducted, however, compulsory redundancy notices were issued. Several sections immediately walked out in protest but were ordered to return to keep the union within legal requirements. By the time that the ballot was finally held, after a six week delay by the unions in getting the ballot organised, any mood for action had largely dissipated, with MSF members voting against any form of action while the AEU and EETPU voted for limited selective action (*Socialist Worker* 18 August 1990). Ferranti finally renegotiated the redundancy programme with the unions and later claimed that only 15 were compulsory redundancies out of a total of 460 across Edinburgh (*The Scotsman* 2 February 1991).

The next round of cuts, involving 350 job losses, were announced in early February 1991, in the midst of the second Gulf war (*Evening News*, *The Scotsman* 2 February 1991). A leaked memo, 'Cutting Costs', suggested that GEC were unimpressed by the cost-cutting efforts of the Edinburgh management in 1990. It said, 'Since we must expect to live through hard times as well as sunny seasons we must be able to increase our efficiency ... when demand falls there must be less procrastination in the reduction of numbers employed' (*Socialist Worker* 23 March 1991). By announcing redundancies at this time GEC further inflamed the situation. The timing of the announcement was severely criticised by the unions because many workers were working 'flat out' producing equipment to support the RAF and the Navy in the Gulf. Only a few weeks earlier Prime Minister, John Major, visited the South Gyle complex to promote the Ferranti equipment being used in the Gulf (*Topic*, March 1991). Extra shifts were being worked every Saturday and Sunday plus two evenings per week and the factories were even opened on Christmas Day and New Year's Day (Kimber, 1991). A bulletin produced by union activists reported how management 'Team Briefings' repeatedly stressed the importance of production for the Gulf, particularly the servicing of equipment for Tornado:

- John Major wishes to thank the Ferranti workers on the magnificent role they are playing in the current crisis (Jan '91)
- Our products are performing well in the Gulf (Feb '91)
- Thanks are coming back to the loyal and supportive staff in the UK (Feb '91)

(Ferranti Bulletin #2: Vote For Action; Ferranti Bulletin #4: Step Up The Fight Now)

The same Team Briefings contained contradictory messages:

> In the Gulf morale is good among our teams. Equipment is performing well. In particular the crews of the Tornados are very pleased ... Employees whose jobs are at risk due to staffing levels have been informed by their supervisors (Kimber, 1991)

The AEU convener, Kenny Barnes said,

> We have to be realistic and accept that if there is less work it [GEC] will have to trim back. But the timing is pretty sick. There are a number of people who take the view that this is a most unfortunate time to do this. We have people in one section working double shifts and through the night while people are being paid off next door. It is pretty clear we will have to pursue civil diversification with a vengeance or we will be facing the death of a 1000 cuts (*The Scotsman* 2 February 1991).

Here again the principle of redundancies was accepted, 'if there is less work', while being criticised indirectly for insensitive timing and uneven workload spreads. Instead, unions pursued a policy of going through procedural negotiations to mitigate compulsory redundancies and to improve redundancy terms. However, while the unions were not prepared to ballot for action over either the terms or the principle of redundancy, some sections were prepared to support a ban on overtime working. Individual shop stewards won support to implement an unofficial overtime in five staff sections, involving workers on the Tornado radar. In the context of the second Gulf war, where Ferranti products formed part of the Pax Technologica gathered for 'Desert Storm', even an overtime ban could have an immediate effect on the in-service support and supplies needed in the theatre to keep the complex technologies operational. However, the MSF shop stewards committee, with one eye on the law, rejected a proposal to ballot for an official overtime ban before negotiating procedures had been exhausted. A tacit understanding was reached among shop stewards that there was no law preventing individuals from refusing to work overtime on a personal basis (Kimber, 1991).

Yet before the vote the situation remained volatile. When the vague announcement of the numbers being made redundant was translated into precise figures for particular divisions the mood of the workforce could shift from seemingly disinterested passivity to stormy mass meetings demanding immediate action from the unions. One example of this was the outrage over a further 45 redundancies at Display Systems in South Gyle on top of the 350 announced

during the Gulf war. The South Gyle complex had been largely unaffected by redundancies in the earlier exercises. Indeed Robertson Avenue was the worst hit site in this round, with test equipment manufacture being concentrated at Donibristle in Fife.

As a modern, purpose built site on the outskirts of Edinburgh, workers at 'the Gyle' often seemed remote from affairs in the city sites. During the Gulf war the Support Division at South Gyle played a critical role in supporting GMav products in the theatre through field maintenance support and the provision and manufacture of spares and repairs of parts at home. Although the trade unions had a presence, their base and cadre among the Gyle workforce was not as deeply embedded as at Silverknowes or Crewe Toll. Thus the ferocity of the Gyle workers' reaction came as a bit of a surprise to the trade unions. Barnes for the AEU said, 'We had a very, very hostile meeting. People were upset that they have been let down by the company after their efforts during the Gulf crisis. *It was all we could do to make sure they did not walk out.* They feel they have been kicked in the teeth' (*Evening News* 3 April 1991, emphasis added). The unions reasoned that GEC had kept their plans for the South Gyle redundancies secret until the possibility of disrupting supplies to the Gulf was lifted. Rab Menzies, Senior Shop Steward added, 'When the redundancies were happening in other departments, the management went to great lengths to tell these people they were safe. We can only assume it was so that they could look after themselves during the Gulf war. They have kept their intentions under wraps until it was over' (*Evening News* 3 April 1991).

Although the unions lost the ballot in 1990 for industrial action against redundancies (*Financial Times* 11 September 1990), six weeks after the February 1991 announcement staff workers voted two to one for action short of a strike. The shopfloor unions announced their result a week later, a five to one vote in favour action short of a strike (*Socialist Worker* 6 April 1991). There was a clear willingness by the workforce to impose some form of sanction on GEC, even after a one and a half month delay while official procedures were pursued by union officials. Undoubtedly, the unofficial overtime ban by a minority of sections seemed a more effective means of pressurising management than negotiating through official channels. Staff workers and shopfloor workers operated an official overtime ban and work to rule for the next seven weeks. Repeated appeals by managers to have sections work overtime on particularly urgent work met with refusal. The bulletin produced by union activists, *Ferranti Bulletin #5*, highlighted a number of areas where work fell behind schedule because of the ban, such as navigation systems for the Challenger tank and operators being put on waiting

time at DSD at South Gyle because priority needed to be given to work delayed at Radar Systems Division at Crewe Toll. Even in cases where some workers were willing to defy the overtime ban, the threat of blacking any work performed on overtime during normal hours forced management to withdraw overtime in these sections. Towards the end of May union officials were no longer confident that they could maintain the ban and argued that a fresh mandate from the members was needed by law. When one section agreed to work overtime before the vote was taken over 100 workers walked out in protest. However, when the vote was taken it resulted in a two to one split to end the official ban. This was to be the last case of industrial action for another two years.

Later in 1991, the redundancy terms were cut back by GEC, who argued that the superior Ferranti terms and conditions for Edinburgh needed to be brought into line with the poorer ones prevailing under Marconi at Milton Keynes and Donibristle. A GEC statement announced that '... it is the company's intention to approach any further redundancy exercises on the basis that statutory payments only would apply, but this would be subject to consultation at the time' (quoted in *Scotsman* 12 October 1991). GEC negotiated with the trade unions and eventually withdrew, without agreement, the more generous redundancy and pension entitlements and imposed a much reduced entitlement, the standard GEC package. Money paid in lieu of notice was also scrapped although a maximum 6 weeks notice was allowed this time. The service element was abolished, so people with, say, 20 years service lost a great deal. Since then, all subsequent redundancies have been compulsory and at the statutory redundancy rate plus a small supplement based on age and experience, with no 'in lieu of notice payment' made. Andy Matson, Regional Officer for MSF called the 'dramatic reduction ... stingy in the extreme ... Employees who have devoted years to the company are being offered a pittance for their service' (in *The Scotsman* 12 October 1991). Matson claimed that Ferranti's old redundancy package was worth up to more than two and a half times the GEC deal.

The trade unions were forced to respond. The unions took the company to an Industrial Tribunal, not on the issue of redundancy payments itself but on the way that GEC implemented the new terms. The Industrial Tribunal unanimously ruled that GEC did not allow MSF the required 90 days consultation period for redundancies. Around 500 workers were reported to qualify for the compensation of 6 weeks salary, amounting to about £2000 each, £1 million in total (*Evening News* 8 September 1992). GEC employed top lawyers to get

the ruling overturned at the Employment Appeals Court, chaired by High Court judge, Lord Coulsfield. Although the unions were 'confident of defeating the company again' GEC's lawyers successfully argued to have the ruling overturned. According to Lord Coulsfield, the Industrial Tribunal had given 'no adequate reason' for holding that the consultation period began at the date claimed by the union. Because there was insufficient material to form a judgement he ruled to '... allow the appeal and remit the case to a different industrial tribunal for rehearing' (*Evening News* 31 October 1992). The trade unions did not return to the Industrial Tribunal.

Future rounds of redundancies were handled more carefully by GEC so that selection and consultation procedures were observed. Although based on estimates of projected labour requirements, one senior manager was clear that 'the redundancy process has to be handled very carefully because the Industrial Tribunals could award each employee unfairly dismissed up to £6000'. As one manager put it, 'You don't want to end up at an Industrial Tribunal because they can be costly and soul-destroying for those involved'. Even picking people for the list could be a regrettable exercise for some managers. Constrained by defined selection criteria and continuing to have a residual identification with the family ethos in the workplace, long-standing Ferranti managers found the selection of people, some of whom they may have worked beside for years, an especially difficult task. The selection process did not operate the traditional practice of 'first in/last out'. Although constrained by the threat of compensation claims for unfair dismissal, workers with poor disciplinary records were targeted and it was suspected that shop stewards and workers identified by management as recalcitrant were more likely to be put in the frame for redundancy.

The way that redundancies were handled at a personal level was criticised by a number of interviewees. There was a feeling that the trauma of being selected for compulsory redundancy was compounded by the experience of waiting to find out who exactly is on the redundancy list. To begin with only the numbers to be laid off were made public. Yet it was not unusual to wait longer than a month before the names finally came out and selected individuals were personally informed of their fate. On the day that the names were issued a ritualised 'procession of the redundant' would take place. This ritual involved 'getting the tap on the shoulder' before taking 'the long, lonely walk' to the Manager's Office, in full view of workmates. It was compared to 'a public humiliation'. Then there is a further period of uncertainty where individual cases are reviewed. Here the union might appeal against

redundancies, usually on the basis that it is not the actual job being made redundant but the individual. Even where management show that it is a particular function being eliminated, the trade unions would then attempt to have individuals relocated to another position in the company.

The individual trauma involved for individuals is highlighted in the following examples. In 1989 during the second redundancy round, an interviewee who had only been employed for about a year was informed that she was to be selected for redundancy. It was only after a tense waiting period, following the 'long walk' to see Ron Dunn, that a transfer to another department was arranged. Another worker, a planning engineer at NESD, described his experience of being selected after feeling immune from the threat of redundancy. He had worked for four years on the important TIALD (Thermal Imager and Laser Designator) development project. In 1993 TIALD was at an important stage in moving from development to production. Because of this he felt secure and had only recently begun working on a new budget for a production standard plan. Management wanted all the 'quick fixes and get rounds' which the skilled workers had devised during development built into a much more detailed production planning set, allowing less skilled labour to be used. It was estimated that creating a new, more detailed planning set would have kept two planning engineers in work for two years. The threat of redundancy therefore seemed remote for the small team of ten NESD planners. However four planners were called in to see the Production Manager and told that their 'jobs were at risk', which meant that they would soon be made redundant officially. The first to be called in ended up in tears and had only recently returned from honeymoon and committed himself to a large mortgage. Another described this as a 'kick in the stomach, a black horrible feeling' . The four were the youngest in the section, the least qualified and two of them were thought to have 'attitude problems' and two did not conform to the unofficial dress code thought appropriate for planners. One of them recalled that the immediate supervisor only came out of his locked office after all four had been informed of their fates and 'came out with the immortal phrase 'That concludes the sweep of the Planning Department' and I just couldn't handle it. I turned round to him and said 'Is that me being swept up or swept out?' He just bolted back into his office and locked the door'. Because of the low morale, the wage freeze and the 'sweated' conditions of work this worker had mixed feelings about being made redundant and was 'less convinced to stand and fight for my job'. His girlfriend had already left her job at Ferranti, where she had been a PA secretary at Crewe Toll for six years, because of the low morale and had been trying to persuade him to leave

because he was bringing his discontent home after work. After spending three months on the redundancy list and using the 'Job Club' set up by the company, he found that his skills were too narrowly-based for other jobs and his ONC no match for job candidates with HNC and degrees. On the final Friday he went in to work to clear out his desk and was excitedly told by the supervisor that there was an opening at Crewe Toll for which his experience in desktop publishing would be ideally suited. A three day extension was granted to allow him to apply for the post, which he was offered immediately. The experience of working three months redundancy notice and being told of an alternative position as late as the final day of the notice seemed to be a fairly common one.

Others, not so fortunate, were compelled to work three months notice without a last minute reprieve. Working the notice had the effect of raising tension in the workplace and had a deleterious effect on performance.

> Working creates tension and bitterness between workmates. The ones who are going begin to resent the ones who are staying and friction creeps in because they can't see why they have to go and not somebody else. It doesn't seem to make sense even from the company's point of view because of all the petty things that go on like vandalism, sabotage and stealing.
> (Electronic design engineer)

Some managers seemed oblivious to the underlying tensions created. The re-allocation of work tasks during a redundancy exercise led to 'some grumbling about having to do three or four jobs', one manager said, but overall it has been a 'fairly painless' process .

Changing complexion of the workforce

Some measure of precisely who restructuring has been 'painless' for can be gleaned from the following data on the changing workforce composition before and after the GEC take-over. This section will employ a number of measures to determine the changing complexion of the workforce, including occupation, gender, age and registered disability.

Occupation

From Table 9.1 it is clear that the total number employed by Ferranti in Edinburgh was already in decline before the GEC take-over. Total employment fell by nearly half between 1986 and 1994, with the rate of job loss more marked in the years after 1990. The 6571 jobs in 1986 fell to 5859 by 1990 and 5102 in 1991 before dropping to 3383 in 1994. The rate of

job loss was around 11 per cent in the four years between 1986 and 1990, but speeded up quite dramatically after the take-over - some 42 per cent of 1990 total employment was lost after GEC took control.

Table 9.1 Shifts in workforce composition by payroll category and sex, 1986-94

	March 1986		March 1990		March 1994	
	Male	Female	Male	Female	Male	Female
Technical staff	1778	102	1909	115	1071	103
Check workers	1637	832	1286	490	545	161
Management	1032	27	1088	35	1060	36
Clerical staff	350	475	169	409	185	222
Apprentices/ trainees	320	18	330	28	-	-
Total	5117	1454	4782	1077	2861	522

Source: Company sources

Restructuring affected different workgroups differently: check workers were the worst affected, retaining just over one quarter of the 1986 employment levels by 1994; clerical staff were next, retaining around half; while technical staff stood at around two-thirds of their former strength. Meanwhile, employment in management categories rose marginally over the same period. Again, if we take the four years before and after GEC the rate of job loss is more pronounced for the later period for all categories. Overall, check workers declined by nearly a third between 1986 and 1990, and by almost two-thirds between 1990 and 1994. Clerical staff fell by a third between 1986 and 1990, and by another third over the next four years. After a slight increase in the years immediately preceding the take-over, the number of technical staff was almost halved between 1990 and 1994. Managerial staff alone increased in numbers over this period, albeit slightly, and nearly doubled their proportionate weighting in the workforce.

To get a clearer picture of shifts in the workforce Table 9.2 gives a more precise breakdown of work categories based on EITB definitions. This Table shows that PESTs emerged as the single largest group, moving from just under a quarter to nearer a third of the total workforce. Technicians dropped from being the largest single group to second largest, well under two-thirds of their 1991 size. Similar strengths were retained by Clerical staff at 61 per cent and Skilled Manuals at 60 per cent. Operators and Apprentice/Trainees were by far the worst

affected with the former at 43 per cent of 1991 strength and the latter at just above a third. The vague Management category in Table 9.1 is sub-divided into Managerial staff, Supervisors and Administrative and Professional grades in Table 9.2. These categories retained a higher proportion than average in 1994 of their 1991 base: Management (104 per cent), Administrative and Professional staff (80 per cent), Supervisors (67 per cent) and the much smaller number of Others, mainly canteen staff (78 per cent).

Table 9.2 Shifts in workforce composition by EITB categorisation, 1991-1994

EITB category	1991	1994	1994 as % of 1991 numbers
Technicians/Technician Engineer	1141 (22)	668 (20)	59
Graduate Engineer	1108 (22)	980 (29)	88
Clerical/Secretarial/Typists	588 (12)	357 (11)	61
Operators	574 (11)	246 (7)	43
Skilled Manual	508 (10)	307 (9)	60
Administrative and Professional	360 (7)	289 (8)	80
Supervisors	239 (5)	159 (5)	67
Managerial staff	220 (4)	228 (7)	104
Others	58 (1)	45 (1)	78
Apprentices/Trainees	306 (6)	104 (3)	34
Total	5102	3383	66

Source: Company sources

It is clear that even in this short time period there has been a sharp confirmation of the trend towards the increasing importance of highly-qualified labour in contrast to the decline of routinised, manual labour. The increased use of sub-contracting out machining and assembling tasks and the increase in the higher technological content of avionics explains much of the reconfiguration of the labour force on the basis of technical knowledge. The relative consistency of Management and Administrative and Professional strengths while the numbers of direct producers tumbled, in part reflected the duplication of specialised activities wrought by divisionalisation in decentralising decision-processing tasks (as opposed to policy-making tasks) and increased levels for monitoring and measuring the performance of direct producers.

However, Table 9.3 shows that while the number of 'direct' productive workers fell by around one quarter between 1991 and 1994, the number of 'indirects' fell even faster, by just under half over the same period. The result has been a changing balance between overhead and

productive functions: for every two indirects there were four 'directs' in 1994, an extra direct worker compared to three years earlier. Does this contradict the argument that the numbers involved in production support activities have grown in the 1990s while directly productive activities have declined? The definition of what constitutes 'direct' or 'indirect' labour often depends on accountancy criteria rather than changes in actual activities. Increasingly, as the tasks of PESTs became measurable and calculable by amounts of time expended and therefore cost they have shifted over to direct categories. In contrast, those functions which cannot be broken up in advance into discrete, predictable time segments in contact with worked artefacts, such as Personnel, Management, Supervision and Secretarial support, cannot be charged against particular projects or workpieces. But the core of an explanation for falling 'indirects' against rising 'directs' rests with changes in the supply of ancillary service functions, such as plant maintenance, security, cleaning, bus drivers and mechanics and so on. Where such activities were performed in-house under Ferranti they soon became an early casualty of GEC's cost-cutting measures. In eliminating in-house ancillary activities GEC pared the overhead costs to productive, financial 'value-added' activities, to the bone. The fall in 'indirects' can thus be accounted for in substantial measure by the cutting away of 'non-essential' ancillary functions and the peculiarities of definitions used for accounting purposes.

Table 9.3 Shift in direct/indirect employment numbers and ratio, 1991-1994

	Direct	Indirect	Ratio
1991	3051	2050	3:2
1994	2266	1117	2:1

Source: Company sources

Taking indices of sex, age and disability it is possible to refine further these initial impressions of changing workforce composition according to function and to enquire: what were the primary social characteristics of an emerging workforce heavily biased towards managerial and higher grade technical functions?

Gender

Male workers always constituted by far the greater part of the workforce at Ferranti and dominated management, engineering, professional and skilled positions. Segregation by sex in Ferranti occurred both vertically and horizontally: vertically, women were to be found at the base of the company hierarchy, horizontally, they were concentrated in mainly clerical and

routine assembly activities. The position of women workers at Ferranti barely changed in a quarter of a century. In 1966 women constituted around a quarter of the workforce; twenty years later women still formed less than one quarter of the labour force. Eight years after that women fell to around one in every six workers. This is significant since Ferranti had a long tradition of employing large female workgroups, particularly in routine assembly line work.

The already poor position of women in the workforce thus deteriorated, both in the years before the take-over and afterwards, compounding the unequal sexual division of labour. According to Table 9.1, in 1986 women composed 28 per cent of total male numbers, declining to 22.5 in 1990 and declining again to 18 per cent by 1994. Even in occupations where women had traditionally been over-represented, such as clerical, typing and general office duties, the position worsened both relatively and absolutely. Male clerical employment increased from 169 to 185 in the four years before 1994, while women clerical grades were nearly halved from 409 to 222.

But it was the relative position of hourly paid women workers which deteriorated furthest. Hourly paid women had been the single biggest female employment category and it is instructive to compare their changing position compared to male check workers, the second largest single group. From half of the rapidly decreasing male figure in 1986, women fell to 38 per cent in 1990, and even further to 30 per cent by 1994. Although male check workers suffered a decline in numbers by around two-thirds between 1986 and 1994, female check-workers declined even more dramatically by about four-fifths. The category 'check workers' included a range of manual activities from skilled fitters and turners to assemblers of components. The latter were more likely to be women and the former nearly always men, as can be deduced from the figures for apprenticeships. The performance of routine assembly tasks in-house was cutback massively and even faster than cutbacks for the skilled manual category. Table 9.1 suggests that the rate of reduction was more rapid for Operators than Skilled Manual. In contrast, the relative position of women technical staff improved. This was largely because the numbers of male technical staff were almost halved from 1909 to 1060. Female technical monthly paid workers stayed at a fairly constant level: 102 in 1986, 115 in 1990, and 103 in 1994. While the numbers of women remained tiny compared to men, they grew proportionately from a twentieth of male numbers in 1990 to around a tenth in 1994, simply by remaining stable in absolute terms.

Women were massively under-represented in management, the only category that broadly remained constant over this period. Women formed a mere 2.5 per cent of the total number of managers in 1986, and grew only slightly to 3.1 per cent in 1990 and 3.3 per cent in 1994. Always under-represented as apprentices or trainees, women were thus denied the traditional route to skilled or high-level technical activities and ultimately promotion into even the lower reaches of the management hierarchy. The evidence of workforce restructuring shows that existing sex patterns were reinforced and, in contrast to the 'feminization of the workforce' thesis, finds that the redundant worker at Ferranti was more likely to be a female assembler than a male manager or engineer.

Age

Table 9.4 indicates how different age groups were affected by rationalisation. All age cohorts saw their absolute numbers fall in this period. Two-thirds of all jobs lost between 1991 and 1994 were borne by the under 35 year-olds. The largest absolute fall in employment numbers occurred in the 25-34 cohort. Yet they remained the largest single age group, composing nearly a third of the total workforce. The next most senior group, 35-44 year-olds, had the smallest fall in their numbers, retaining around 90 per cent of the 1991 numbers, rising from a fifth to over a quarter of the total employed by 1994. The under-20 year-olds, however, fell to a mere 16 per cent of the 1991 figure while the 20 to 24 year-olds only retained around a third of their strength three years earlier.

Table 9.4 Shifts in workforce composition by age, 1991-1994

Age category	Employees in 1991 (% of workforce)	Employees in 1994 (% of workforce)	1994 as a % of 1991
<20	264 (5)	43 (1)	16
20-24	705 (14)	241 (7)	34
25-34	1561 (31)	1081 (32)	69
35-44	1002 (20)	901 (27)	90
45-54	995 (19)	636 (19)	64
55-64	575 (11)	477 (14)	83
65+	0	5	-

Source: Company sources (Percentages rounded)

What needs explained here is why the position of under-24 year-olds was the worst affected while the 35 to 44 year-olds were the least affected. In the terminology, under-24 year-olds

faced a negative replacement rate; as people left that category either through ageing or exiting the company, they were not being replaced by a new cohort. Most of the 264 under twenty-year olds in 1991 would have been included in the 20-24 category by 1994, which was stagnating as a category through recruitment policies as much as by leavers. The conclusion must be that the situation of younger workers was adversely affected because of the virtual abolition of apprenticeships. As indicated in Table 9.1, apprenticeships were still strongly supported by the company at the time of the GEC take-over. By 1994 the figures in Table 9.2 for apprentices/trainees had fallen by two-thirds, from 306 in 1991 to 104. Most of these trainees, however, would have been over 20 years-old since only 43 under-20 year-olds are registered in Table 9.4 and would mainly have been engaged in forms of training other than the traditional four-year apprenticeships for technicians and craft workers. As the apprenticeship system declined so the 20-24 cohort could not be reproduced at the same rate as in the past.

In contrast, the least change has been among Graduate Engineers, Managers and Professional and Administrative staff. These categories are the most likely to fall within the over-twenties category. Graduate engineers typically enter first-time employment in their mid-twenties and it is this group who constituted the largest single category in 1994. Yet it is also this group who have been identified as the most susceptible to turnover in numbers. It is therefore important to differentiate PESTs between a settled core group of family-centred, recently upwardly mobile graduates, who have already entered the career seniority path, and a large group of first-time graduates, who find advancement blocked after an early phase of quickly acquiring salary and status benefits . So although I do not have figures for co-relating age and work categories it is reasonable to assume that the most stable occupations in the 1990s have also been those occupied by the over thirty-fives.

The exception to this is the 45 to 54 age group. Again the reason for this has to be inferred. From interview discussions it was clear that there was a large pool of long serving clerical, skilled manual and operators whose functions were being replaced either by automation or by the contracting out of activities. Many of these workers would fall within the mid-forties to mid-fifties age range. Some suggestions were also made to indicate that as such functions were being changed this age band would be the least capable of adapting themselves to new technology or lower status or wage rates. The long accretion of 'ways of doing' over the years was viewed as inhibiting increasingly flexible forms of work performance. Whether this would

be borne out in practice does not seem to be have been demonstrated. Nevertheless, that such assumptions were made based on age is indicative of the fact that by 1994 nearly 60 per cent of the workforce were concentrated in the twenty year band between 25 to 44 years-old.

Disability

Table 9.5 Shift in the number of registered disabled workers, 1982-1994

	1982	1985	1991	1994
Number of registered disabled	159	170+	41	17

Source: Ferranti, 1993, for 1982 and 1985; company sources for 1991 and 1994

The fall in the number of registered disabled workers employed by Ferranti to a tenth of the 1985 peak by 1994, strongly confirms the recent shift away from any notion of socialised production. One manager claimed that workers who might be regarded as disabled may prefer not to register as such for reasons of personal pride. While this may account for at least some undercounting, it only defers the issue, which could be restated to ask what has changed that disabled workers were more prepared to register in the 1980s than 1990s? Employment of disabled workers was often seen positively, as an endorsement of Ferranti's paternalist approach to its employees and the wider community, a sign of socially-responsible employment practices. Ferranti twice won the Manpower Services Commission 'Fit for Work' Award, in 1982 and 1985, in recognition of their contribution to employing disabled workers (Ferranti, 1993:58, 62). Elsewhere in GEC, other parts of the organisation continued to be officially recognised for their disabled employment practices. GEC Avionics, Rochester, for instance, won its third 'Fit for Work' award in 1991 (*Topic*, March 1991). Many disabled workers tended to be older workers who had serious illnesses or developed disabilities while working for the company and so were entitled to an enhanced early retirement package. Again this begs the question why disabled workers were not replaced generationally? Part of the explanation for this lay in strict recruitment policies after 1989 and that the narrower criteria of financial value became increasingly sovereign over social value in Edinburgh. For example, among the 85 redundancies in June 1993 the unions claimed that there was a disproportionate number of women and disabled workers on the redundancy list (*Scotland on Sunday* June 1993).

Sites

Where people work in Edinburgh was also affected by the restructuring. GEC inherited a multi-site organisation dispersed around Edinburgh and its outskirts. The number of sites of FDSL in Scotland peaked momentarily at twelve in the late 1980s when the second part of the South Gyle complex opened to house the Display Division in 1988. Such was the movement of people and parts between sites that Ferranti even operated a fleet of mini-buses working to a set timetable. GEC soon moved to rationalise the Edinburgh factories. In 1990 Bellshill, Telford House and Bellesk House were closed as part of a national reorganisation. Most significantly, Robertson Avenue, situated in a central urban area and presumably encumbered by agglomeration diseconomies, was closed and the Electro-optics Division eventually relocated to Silverknowes as part of the new Navigation and Electro-optics Systems Division (NESD).

Between 1986 and 1994, around one third of floorspace had been vacated while employment levels were almost halved. Table 9.6 indicates that jobs were lost at a faster rate than floorspace was vacated. Thus, despite the closure of Robertson Avenue, each worker on average occupied increasing amounts of space in the 1990s. Some of the recent growth in average floorspace may be accounted for by the physical limits to rationalising fixed capital, particularly where workloads remain roughly constant, and the greater spatial requirements of technical labour. As the Personnel Director put it,

> The average floor space per employee has increased partly because of a changing mix where there is a much smaller proportion of semi-skilled operators who occupy very little space and a higher proportion of engineers who each occupy four times as much space. Technology has also changed with more computer controlled processes which require considerably more space per person employed. Within the buildings many have had space converted from production areas into offices and laboratories.
> (letter to author, 24 January 1995).

While this may be seen as part of a long-run trend, from the 126 square feet of floorspace per average worker in 1966 (see Table 7.2), to 196 twenty years later and 277 by 1994, the more recent shift is closely bound up with the contingencies of restructuring. Technology and labour mixes alone are insufficient to account for the thirty per cent rise in average space per worker over eight years. Floorspace occupied can only be reduced through stepping down in one-off events while employment reduction has been a more gradual process. It is doubtful if the

accelerated trend in growing average floorspace will be maintained over any longer period. If expectations of flexible product and process technologies, and declining and more discontinuous workloads are extrapolated then the further rationalisation of floorspace to reduce the average worker:floorspace ratio, perhaps involving closures of older city sites and integration at the more modern outlying South Gyle complex, cannot be discounted.

Table 9.6 Shifts in floorspace occupied and site-specific employment, Ferranti International and GEC-Ferranti in Scotland, 1986 to 1994

Site	Floorspace (square feet)	Numbers employed per site		
		1986	1990	1994
Crewe Toll	323,000	1944	1528	1379
Robertson Avenue	319,500	1371	998	-
Silverknowes	259,000	1792	1250	958
South Gyle 1	196,150	915	923	590
South Gyle 2	98,250	-	590	377
Bellshill	64,700	214	204	-
West Shore Road	50,000	167	110	72
Bellesk House	32,500	42	159	-
Telford House	16,500	88	57	-
Tantallon	16,250	31	34	-
Turnhouse	12,000	7	6	7
Total space occupied (square feet)		1,289,600	1,378,850	938,400
Average floorspace per worker (square feet)		196	235	277

Source: Company sources

Summary

Between them, low or negative replacement rates and the redundancy programmes halved employment levels in Edinburgh. This contraction affected some groups in the workforce more than others. The typical Ferranti worker in Edinburgh had gone from being a skilled or semi-skilled male manual worker in the mid-1960s to a male professional engineer, who now occupies increasing amounts of floorspace. This worker is likely to hold an engineering

degree, be in their early to mid-thirties, and have ten or slightly less years in the company. While they may be disenchanted with their prospects, they have fared better than younger workers, women workers, technicians and manual workers. They have not fared quite as well as senior management, at least numerically. The soft Ferranti regime of part-socialised production has given way to a more explicit cash-based style which admits of less room for workers who are incapacitated in some way or another. Combined, the changing social complexion of the workforce involved a sense of loss, particularly for those Ferranti workers who held residual notions of the social workplace as a point of integrated, co-operative activity. Following the closure of Robertson Avenue in the heart of the city, continuing question marks over the future of 1940s site at Edinburgh's Crewe Toll and the possible concentration of activities at the shiny 1980s South Gyle sheds at the edge of the city the erosion of Ferranti's identification with Edinburgh was well advanced by the mid-1990s.

Workplace relations

As we have already seen, GEC have a deserved reputation for, and a history of, poor labour relations. Widely noted for their dislike of trade unionism, the style of industrial relations in Edinburgh has changed in important ways. This seems to involve the progressive elimination of any social obligation to labour, with Personnel functions more clearly identified with the task of squeezing costs. One manager involved in personnel functions outlined the shift in labour policy at the firm,

> GEC have made little secret of their hostility to trade unions and attempt to marginalise them by presenting them with fait accompli. They don't properly understand the positive contribution trade unions can make. In my division I have retained a rapport with the trade unions but I also see the need for survival in a competitive market. My role is now as much that of a businessman as that of a Personnel [manager]. This need not be contradictory since each role needs to complement the other. Personnel now make a bigger contribution to the business. As I like to put, we prefer to be at the front of the horse where the head is, leading and guiding, instead of cleaning up the mess at the back, out of sight, and largely forgotten ... The importance of Personnel has been recognised at NESD. I believe the MD should have the Finance Director on one side of him and the Personnel Manager on the other.

In taking this approach workers are treated as a 'human resource', distinct from other capital inputs but to be managed across the same cost-frontiers. In some important ways this is seen as a break from Ferranti's attempt to socialise production through internal labour markets and reward systems, a shift seen as one of a management style appropriate to the 'realistic' and 'practical' demands of changed defence market structures.

While senior management were concerned that the trade unions might be in an improved bargaining position after divisionalisation, the trade unions themselves viewed divisionalisation as part of the strategy for undermining the effectiveness of their organisation. Although operating as formally distinct units with local discretion and autonomy in labour policies, the management of industrial relations continued to be centralised in Edinburgh. Common labour policies were emphasised, even for divisions like NESD, which now stands formally outside the GMav organisation:

> When GEC arrived they had their own approach to Personnel and brought in a Personnel Director. I recently moved sideways to NESD as a result of the process of divisionalisation, instead of being responsible for all of Edinburgh ... The move to self-contained divisions was viewed with suspicion by the trade unions since it split them up. All of the unique agreements that had been struck over the years for individual sites under Ferranti were extended to cover the four divisions in the first instance. This allows each division to adopt those agreements appropriate to its particular situation and to drop the ones they have no need of. NESD is now under the tutelage of GEC Marconi Defence Systems Ltd (MDSL) and not GMav, like the rest of Edinburgh ... I report direct to Stanmore, although ... Crewe Toll has overall responsibility for Industrial Relations matters across Edinburgh. We meet once a month, or as required, to discuss common policy matters although we are split by divisions and now by MDSL and GMav.
> (Personnel manager)

For GEC, the complex rules and procedures for monitoring and regulating labour under Ferranti were culturally self-serving for reproducing the management hierarchy, resulting in a senior management fixated by the minutiae of minor transgressions, such as lateness or sick records. GEC's cost-driven approach has had the paradoxical effect of relaxing some labour disciplines. Increasing reliance seems to be placed on the general effect of repeated redundancies on workforce morale as a disciplining mechanism.

> We try to use disciplinary procedures sparingly. There are not many disciplinary problems. Where they do come to light, such as in the case of peddling or using prohibited drugs on the premises, we want them to have an exemplary effect. Chancers are now made an example of ... A small team such as ours cannot hope to monitor every single discretion so it is up to line management to become more proactive and we have set up a programme for first line supervisors to acquire skills in the management of people.

Under Ferranti, there was a tendency for disputes to get immediately passed over the head of the line supervisor. This was mainly due to a combination of line supervisors not seeing personnel issues as a proper part of their functions; not having the ability or training to deal with issues locally; and the close relationship that existed between the unions and the

Personnel Department. Line managers were often former engineers and usually saw their role in narrowly technical terms. A blue collar trade unionist echoed the views of the Personnel manager, although he thought that supervisors were not yet fully conscious of the potential power they could wield.

> The managerial regime is now more lenient than before on the relatively trivial things that Ferranti used to get so worked up about: things like clocking on has been abolished, sick record is rarely used for disciplinary reasons. However, while they are more lenient on the nitty gritty they act more quickly and decisively on gross misconduct ... Line management now have a lot more authority where they were marginalised in the past by Personnel. These are the same individuals and they may not have realised the extent of their power yet.

Over 1991 and 1992 GEC implemented single-status employment or 'harmonisation', equalising terms and conditions of employment between staff and manual workers. Many managers considered this the single biggest change to happen under GEC. According to the Personnel Director, the main terms of harmonisation were that the formerly hourly paid workers were moved to: a monthly credit transfer payment system from being paid weekly in cash; an annual salary review based on performance/merit assessment from a piecework bonus system; and have common holidays, sickness pay and other terms and conditions with the staff (letter to author, 24 January 1995). GEC managers hoped that hierarchical distinctions between grades would fall into disuse. A shorter working week was negotiated, including a one p.m. finish time on Fridays. Although GEC made this concession reluctantly, it has been claimed that the 4.5 day week and early Friday finish became an attractive benefit for recruiting scarce skills to the company and has helped to hold people the company want to keep. The company also benefited financially from the deal, making Friday afternoon the principal day for overtime, which was cheaper at time and a third than the double time overtime premium paid for Sunday working. 'Bell to bell' working was also introduced and officially recognised tea breaks during the shift were abolished. Harmonisation was also welcomed by many workers and managers with experience of the fine, and not so fine, gradations of status under Ferranti.

> The move to single grade status is also a step forward. There was a fair bit of class elitism at the higher levels of Ferranti. They used different words from 'staff' to describe manual workers: 'manuals', 'hourly-paid', 'check workers'. The staff/hourly distinction was a class thing; the staff worked less hours, [had] more holidays, had good pension entitlements and received sick pay - they used to eat in separate canteens. The single grade status puts everyone on the same terms and conditions.
> (Engineering convener)

Such sentiments about the just abolition of blue/white collar distinctions were repeated frequently in conversation. Yet the eclipse of the craft standing was painful for many skilled workers. The agreement negotiated in 1995 to end such demarcation as continued to exist was sensitive to this in areas where residual concentrations of craft workers remained. One such area is NESD:

> We have just negotiated a flexibility agreement which will rid us of demarcation rigidities and pigeon holes. All bonus schemes are scrapped and the ex-hourly paid are now on PRP [Performance Related Pay]. We want to create small working teams which begin to break down the white/blue collar divide. Naturally, the ex-hourly paid want to keep their own identity, they want to 'keep the join' if you like. They want to protect their time-served status and the distinction against dilutees. Since this group are only about 30 in number there is really no point in going to the wall over it. The time served status is protected over a five year period and there is a tacit acceptance of 'the join' at NESD while other divisions are attempting to merge completely. This is largely because the majority of hourly paid work in NESD.

Harmonisation of blue and white collar grades also had the effect of rupturing Ferranti's relations with the employer's organisation, the Engineering Employers Federation (EEF), which sets minimum wages and conditions across the industry. In 1979 GEC withdrew from the EEF because it felt that the EEF's formal procedural arrangements and common policies for member employers were too restrictive for dealing with trade unions on a site-by-site basis, fragmenting and weakening trade unionism within the company (Transnationals Information Centre, no date[1986]:9). When it had around 9000 workers in Scotland Ferranti had been one of the biggest fee payers to the EEF because membership was based on workforce size. In some respects, Ferranti *were* the EEF in the east coast of Scotland. With harmonisation GEC effectively tore up the EEF's Black Book, which contained common standards for manual workers in the engineering industry.

Ferranti managers claim to have an ongoing affinity for what they termed 'co-operative, representative and constructive' trade unionism. Now that harmonisation relieved managers from spending time going through lengthy procedures over relatively trivial misdemeanours or relatively minor regrading claims, there is more emphasis on 'consulting' the unions, that is, informing them of management's intentions rather than detailed bargaining.

GEC managers, however, detect a residual recalcitrance among the Edinburgh workforce. This was viewed as a cultural hangover from Ferranti. One GEC manager identified a distinctly Scottish factor at work, making a need for a 'Celtic' form of management. 'The labour force in Scotland seem more disinclined to participate in the change process than comparable ones in England. This means that a more direct form of leadership of the workforce is needed'. In response, quarterly presentations have recently been given to the workforce, in groups of about 50, outlining the company's plans and its place in the market competition. 'The focus on the need to be competitive is now being understood by the trade unions, making them more aware of the realities of life'.

When discussing the mood on the shopfloor, however, the words that were most frequently used by both shopfloor workers and managers were 'resignation' and 'uncertainty', indicating a general feeling of despondency and demoralisation. A sort of fatalism has been created where workers have reluctantly adapted to the new regime. Demoralisation among the workforce and the trade unions seems to have been accentuated in the aftermath of the 1993 strikes.

> ... last year the only way we could fight it was to have the strike but that has gone and there is nothing we can do. There is no point in going to work and moaning about it all the time. If you work for GEC, you either get on with it and make the best of what you have got and realise that it pays the mortgage or whatever, or get out ... OK, it is not a great job, but there are a lot of worse jobs out there at a lot worse pay.
> (MSF member)

The 'softly-softly' approach to formal discipline has therefore been unable to mitigate five years of redundancies, pay restraints, closures and simmering industrial unrest. The coupling of workforce morale and work effort, which formed such a central part of Ferranti management's outlook, has been jettisoned by GEC. Questions of workforce morale lag a fair way behind effort measured in monetary values.

It was frequently stated by trade unionists that GEC deliberately create a climate of uncertainty to bolster effort and sales.

> The uncertainty about the future also plays an important role here; it has a disciplining effect. They deliberately cultivate a climate of fear, taking the workforce up one minute by talking about the great future ahead of us, only to take them back down the next by adopting a confrontational attitude and putting the pressure on for further cutbacks.
> (MSF shop steward)

Rumours also circulated that certain GEC managers deliberately employed aggressive, even bullying, tactics to put pressure on individuals to leave the company. One manager in particular was noted for conducting campaigns of petty harassment and public humiliation such as moving individuals to isolated work areas and even, on occasion, physical confrontation. Yet the fact that this was believed to be one method employed by GEC for reducing numbers without going through a formal redundancy exercise indicates the extent of suspicion of the company held among some sections of the staff.

Relations within the workforce have also changed. Under Ferranti a burgeoning culture of extra-workplace activities had been created, in many cases informally based in the section. Work groups were often welded together by the antics of or stories about 'the characters' that each section seemed to have. It was believed that people worked together effectively in part because of the relatively minor breakdown of acceptable behaviour, which was always constrained within certain limits. Some socialising continues to be encouraged but is more usually officially organised and closely related to work effort. In this it loses its informal, voluntary character. It is worth quoting at some length the views of one middle manager who felt that something had been lost under the GEC regime:

> There is less outside contact among the workforce and association away from the workplace. Relations are more instrumental inside the firm. The changes have amounted to a culture shock for the longer term workers here. Before individual sites had a specific identity within the overall family character of Ferranti and the Scottish Group. A recent reunion of the ex-Robertson Avenue people illustrated just how much they had in common, even after years without coming into contact with each other. Now they are seen as part of the GEC ethos of self sufficient units who need to look after themselves and do what has to be done in order to survive as a functioning unit ... The characters that were around before are disappearing and are being replaced by faceless grey men ... The working day was more enjoyable and whenever extra effort or hours needed to be put in there was always a willingness to do so. This commitment did not have to be imposed through rules but was genuinely given by the men. If extra hours needed to be put in to meet a milestone target, for example, after making the necessary phone calls home at the firm's expense somebody would go out and get take-away food and maybe a couple of cans. That kind of informal relationship would be impossible now ... Now you hear more insistent moaning and complaining than previously, even among people who consistently turn in high quality work ... However, before where social events would have been organised among the men themselves, the company make it their business to fund and organise events in recognition of a particularly good performance, such as an early completion or one finished under budget. There still needs to be a balance struck between the family culture, the sense of belonging, and the realities of commercial practices.

It has been argued that GEC deliberately sets its face against cultivating an overall corporate identity (Transnational Information Centre, no date[1986]:9). Instead of employees being encouraged to see themselves as part of a 'GEC family' GEC attempt to create allegiances to the particular division in which they work. This is clearly related to the myth of local divisional autonomy. As we have seen operational control is delegated to divisional managers, known within GEC as 'the barons' because 'they owe their allegiance to central management but 'own' their own particular piece of territory' (Transnational Information Centre, no date[1986]:8). The lack of a corporate-level centralised focus hinders trade union efforts to organise across the company. The non-marketing information GEC releases about its operations is largely confined to meeting its minimum statutory obligations and very little disaggregated data below division-level becomes available. Thus 'the barons' treat divisions as fiefdoms which are only examined in any detail by the centre after budgeting difficulties are revealed, as was the case with Ron Dunn. All this fastidious accounting takes place within the company. From the outside comparative financial performances, employment levels or structures of sub-divisions or within particular sites are difficult to disentangle. Paradoxically, GEC eschew a corporate image but restrict data, and particularly financial data, to the corporate or divisional level, while sub-divisions and subsidiaries, for which little information is available, are meant to generate their own localised identities. In the end, however, the emphasis put on globalised data by the GEC centre undermines local, workplace or community level identification with the company.

Labour Process

If labour disciplines have become formally more relaxed at the same time they have often been experienced as tighter, more regimented in practice, involving less socialised leakages. The organisation of work has also contributed to the climate of restricted sociability. Ferranti did not develop quite the same kind of elaborate rigid skill demarcations which evolved in traditional engineering centres. Products were manufactured in small numbers, often customised to suit particular customer requirements. Conventional craft demarcations only really existed between electrical and mechanical disciplines. The main division was between mental and manual labour rather than between different craft groupings. Two areas where a perceptible difference was thought to exist from other local engineering firms were in the relationship of craftsmen with designers and planners and the exacting inspection regime for workpieces. Designers sometimes involved craft workers in the design aspects of a job, taking the advice of the craft worker, say, about the machining properties of certain materials while

the detailed system of checking workpieces was more thorough than other engineering firms because of detailed Ministry quality procedures.

The division of labour across sophisticated and complex product technologies within Ferranti required an elaborate web of relationships for co-ordinating labour and materials through time. For instance, any alteration to a piece of equipment was a bureaucratic and costly business.

> If you changed one part of a drawing, you had to do some amount of paperwork. You had to get signatures from your boss to four bosses up ... The amount of money involved in changing one engineering drawing [means] you are talking thousands [of pounds].
> (Design engineer)

The quality documentation demanded by the MOD and the role of the customer within the development programme ensured that even a minor modification in the development process, say to improve product performance under extreme conditions, had a knock-on effect for an entire range of related components and sub-assemblies. While there was a certain degree of flexibility for resolving product technology problems, process systems tended to become rigidified with a premium placed upon traceability.

> The company philosophy was based on the principle of being a high tech, high specification, jobbing shop for the MoD. Because there was a high degree of technological change, flow line processes were impossible to introduce. Working on highly sophisticated equipment meant the hundreds of Alteration Request Sheets would be raised because even one slight modification would have a knock-on effect on other related parts. People were concerned with the intricate workings of that piece of the product they were working on but would have little idea about where they're bit fitted in the overall system. This was necessary, in part, because of the need for secrecy and security. Problems elsewhere just couldn't be foreseen.
> (Design engineer)

A certain degree of specialisation was also acquired by development teams who, once brought together for a project, tended to remain in place. This was seen as keeping labour in reserve for the next development programme. The result was that a fair amount of underemployment was tolerated under Ferranti in preference to fragmenting existing expertise. For development engineers and designers the periods of filling in time between programmes were felt to be undemanding and unrewarding. This boredom ultimately contributed to Ferranti's turnover

problems. Paradoxically, the underemployment between peak programmes was both necessary to keep skills but was also an important factor in losing them.

In terms of process technologies, Ferranti were one of the leaders in developing Numerically-Controlled machine tools and Automatic Draughting equipment. In the early 1950s, Edinburgh developed its own milling machines which could be programmed to manufacture complex three-dimensional shapes to very high tolerances with very little wastage and in the early 1960s applied the principles of Numerical Control to accurately control centre lathes, using a system known as 'Digiturn'. By removing much of the time spent on setting, measuring and interpreting drawings through electronically measuring the workpiece, Digiturn was claimed to reduce time on the job by as much as 70 per cent (Ferranti, 1993:31). Where this investment had been made there was a tendency to employ it regardless of whether it was the most economical method of manufacture. The manufacture of a Helmet Pointing System under license from a US firm, for example, was 'anglicised' so that the NC capabilities would be utilised. Instead of adopting the US method of fabricating the helmet from a moulded cast, Ferranti adopted the more wasteful method of machining the helmets out of a solid block of material using the NC machining capabilities. Despite this initial lead in NC technologies, Ferranti sold the Digiturn activities at Dalkeith to Plessey for £2.5 million in 1969.

Ferranti continued to be innovative in automatic measuring devices and draughting equipment. One manager described the possibilities for overcoming process complexities through the flexible integration of CAM-X, a computer--aided design system developed by Ferranti in the early 1980s:

> New technology has made an appreciable difference. Before, we had a huge drawing office manually drafting everything. We had a huge machine shop with machine set-ups constantly being broken down to perform some other operation. Now CAM-X allows us to simulate the workings of a piece of equipment and gives us an overview of the chain reaction triggered by any alteration to the design. 'Group technology cells' were introduced to reduce machine breakdowns. Where a particular machine will be dedicated to, say, machining diameters under 1.5 inches while the next one will machine diameters over 1.5 up to 3 inches, or whatever and now, computer numerically controlled, Flexible Machining Centres, allows us to machine solid blocks of material three dimensionally without transferring the workpiece to another machine.
> (Engineering manager)

A director told a similar story of what productive technologies made permissible where labour flexibility has been established:

> In terms of process technologies, considerable investment has gone into new digital design and manufacture and drawing office aids. With CAD we can now bypass intermediate linkages in the chain of:
>
> Design > Drawing > Planning > Manufacturing > Test.
>
> The designers can now simulate drawing/planning and can process the work direct for manufacture, and sometimes directly programming the machinery itself. In terms of manufacturing the Flexible Machining Centre has massively increased machining productivity.

Yet such claims for integrated design/production technologies need to be treated with caution. During an earlier 'employer's offensive', which employed productivity deals and technology to raise the rate of exploitation in the 1960s, Cliff (1970: 34) uncritically reported the introduction of automatic design equipment at Ferranti's Edinburgh factories:

> This equipment does not produce drawings but tapes which are used on the factory floor directly to operate machines. This process represents the telescoping of three major functions: planning, methods work and draughting altogether. The DATA (draughtsmen) members at Ferranti, against their union's advice, accepted such a telescoping in a productivity deal which gave them a pathetic 6 per cent increase.

The tacit knowledge of labour, its indeterminate versatility, has not diminished in importance because of the introduction of CAD technologies (or the earlier automatic design equipment). Although productive technologies are usually thought to form the core of emerging productive systems, such systems are first of all socially organised. This vision of an integrated flexible system thus needs to be qualified to account for the continuing role of planners in mediating between the design/drawing function and product manufacture. In some respects, reliance on human ingenuity in mediating between two incompatible process technologies has increased. Because CAM-X was developed in-house by Ferranti to provide computer-aided drafting facilities it was not directly integrated with the CNC machine tools. The kind of discrepancy between design and machining technologies, meant that the organisation of work continued to be a labour-intensive process, if a little less so than previously. The basic process has therefore remained broadly constant. In the case of radar equipment, for example, the original package of work in the contract is initially deskilled by breaking it down into manageable chunks. The Drawing Office then develops the design drawings. These are passed on to the

Planning Department, who interpret and break down the basic design into detailed plans for machining, fitting and assembly. Even when it reaches the shopfloor Planners continue to play a crucial role in mediating its reception and execution, smoothing out scheduling, tooling or other technical difficulties.

The introduction of production technologies requires a will to invest in the first instance. Although figures for capital investment and private venture research are not publicly available, these seem to have remained fairly constant between 1990 and 1994, although specialised fixed capital, such as test equipment, continues to be funded in the main by the customer, the MOD. Furthermore, by the 1990s GEC could benefit from previous rounds of fixed capital investment undertaken by Ferranti. Under Ferranti, there was a willingness to stay in the vanguard of process technology through investment, although Ferranti also benefited from considerable MOD subsidies for new plant. One manager quoted the example of the ease of applying for £30,000 of funding in the 1970s, 'a lot in those days', for a water washing machine for processing printed circuit boards which occupied 700 square feet of space.

Under GEC the capital application process is more stringently related to financial criteria and managers need to be partisans for their applications:

> Each division now applies directly to the board for capital investment and the application needs to be directly related to expected cost savings or necessity. The capital application process depends on push from the applicant. If the application is not followed up then it will lie dormant on somebody's desk because the assumption will be made that it is not wanted desperately enough. Where a sound financial case is made the application, with a push, will be successful. For instance, our old Ferranti personal computers were getting on a bit and we had a maintenance contract to get them repaired when they went down. Yet it was a false economy because we would be even cheaper to buy a new system based on the kind of technology now available than to persist with the costs of poorly performing PCs. When the application went through we spelled out the financial benefits of replacing the old computers and got the capital investment approved.
> (Engineering manager)

Such capital intensity puts a premium on retaining highly qualified labour to programme computer-aided design, drafting, planning and machining functions. Yet labour turnover persisted as a major problem in the 1990s. The evidence from two different labs at Crewe Toll, tells much the same story. At one lab, from a workforce of forty, 14 people left between 1993 and 1994. From an average of around forty or fifty engineers in the other lab, it was

reckoned that the annual turnover was at least 25 per cent. Much of this movement seems to depend on position in the relationship between career and family cycles. As an engineer from the latter lab described it.

> There is a central core of management there, but there is a high turnover. I mean I am probably one of the most experienced engineers on the job and I am only 28. Once you come up to my level, there are people who have been there maybe ten or twenty years. They are not moving as their kids are going to school in Edinburgh - they are really tied. Again you see them getting persecuted as well because the bosses say 'they have got their kids at school so they are not going to start going down south, so we will give them a minimal wage rise this year', even though technically they are very good and they could command better salaries elsewhere. They know that they are not going to leave ...

Even people who remained optimistic for their career prospects detected a general feeling of aimlessness. Again all the previously mentioned problems associated with morale were given for the turnover: dissatisfaction, insecurity, resignation, demotivation, falling real earnings, less interesting or challenging work, career immobility, increasing work intensity, and so on.

White collar workers seemed to be increasingly subject to similar time disciplines as blue collar workers, while the responsibility and discretion for some manuals had been increased:

> An attempt has been made to bring in TQ methods but GEC pay lip service to people. Manuals worked to a bonus system, PBR [Payment by results], where time has always been under scrutiny. Now with white collar workers working from workstations and where electronically recorded data takes away key elements of judgement and discretion, the monitoring of time has become further intensified for staff in certain jobs, e.g. draughtsmen using CAD. There has also been a cutback in third-party inspection, with operators expected to inspect their own work. Other jobs have vanished because of new technology, such as the wiring of circuit boards which was previously done on a mass basis mainly by women.
> (AEEU convener)

The same worker was quite clear about the different possibilities for flexible time-use through shift-working, 'silent running' or multi-manning, leading to more intense use of productive technologies:

> The thirty seven hour week was won in 1987 as part of a wider campaign in the engineering industry. A condition of this is that we are supposed to operate bell to bell working but there has been no real change in practice. However, pressure on deadlines does filter through from the management to the shopfloor. Management are also making inroads to 24 hour running of high value machinery. A four-night shift system operates

just now but there is the possibility of three shift system being introduced. There is also the possibility of 'silent running' where machines are set up to run unattended, or the multi-manning of machinery, so that one operator covers three or four machines at the same time.
(AEEU convener)

With unrelenting pressures for economy and the externalisation of low level routine manual functions, harmonisation of the grades amounts to a recognition of an admittedly weak trend towards convergence between blue and white collar workers; proletarianisation of staff conditions and a limited increase in autonomy in some areas for blue collar workers. Convergence in conditions at work should not be exaggerated however and should be seen in the context of a tension between intensification of work strategies and continuing requirements for specialised kinds of labour.

The substitution of capital for labour in this process may have gone some way in addressing the perennial problem for Ferranti of labour turnover. The paradox here is that as highly qualified labour becomes even more indispensable to the labour process it feels less valued in monetary and status terms and senses a declining sociability in the workplace. While these symptoms of proletarianisation of intellectual labour abound, the importance of the extensive use of manual labour diminishes. Smaller numbers of more versatile manual workers are employed, while many of the routine jobs formerly done by them gets sub-contracted out. Ferranti's large machine shop encompassing the whole gamut of conventional machining operations no longer seemed appropriate with the introduction of CNC technologies, the economies of using external sources for supplying manufactured components and the changing nature of product technologies. Added to this was the pressures for sub-contracting built into the changed procurement environment.

With the change from electro-mechanical products to digital electronics, the large machine shop simply becomes irrelevant. Under price pressure imposed by MoD competition policy more works gets sub-contracted.
(Planning manager)

Although GEC continued investing in specialised equipment, the machine shop did not especially benefit from this.

The £3 million investment promised for the machine shop under Ferranti has not been honoured. In fact not a new machine has been brought in since GEC took over.
(AEEU convener)

The shift in functional flexibility and the continuing need for selective specialisation in the labour process was aided by the emphasis on out-sourcing inputs as described by one manager:

> In NESD we will be looking to recruit around 100 people this year on the back of a big order. At least 25 per cent of these will come in here as multi-skilled labour so they will know in advance what will be expected of them ... Our direct to indirect ratio is something like 71 per cent to 29 per cent. This is helped by contracting out tasks which we would need done every so often but not sufficiently to justify keeping them in-house. We will always need a facility for certain kinds of machining, for example of glass technologies for gyro lasers in each navigation system.

The use of working time has also been tightened up by GEC in an effort to recoup something of the substantial overhead investment. As one manual worker said, 'Every effort is made to reduce down time, so people move onto other tasks instead of waiting around as in the past'. 'Utilisation rates', measuring time 'actually' working against total possible working time, and direct employment on contracts compared to indirect functions, thus become important indicators of the flexibility of the capital/labour performance: 'We measure utilisation rates to recover overhead costs. This averages out at 67 per cent utilisation time, which is pretty good when you take into account holidays, sick, waiting time, training. The use of working time has undoubtedly improved'.

Despite the fact that traditional forms of apprenticeships were virtually extinct by the mid-1990s, training also continued to be emphasised by managers. Ferranti had been a set feature of the university milk round and one of the major employers of graduate engineers in Scotland. In collaboration with certain university departments, such as at Herriot Watt, Ferranti established extra-curricula courses in optics and set up an MSc based on the kind of knowledge needed for working at the advanced end of electronics. Technical training apparently became more narrowly based under GEC than the extensive set-up employed by Ferranti . Training courses to update skills were now focused on business needs rather than the social function they served under Ferranti for rewarding people. Here also there has been a move to contracting-out. Managers spoke of having a more generous training budget allocated and being able to buy-in training in a more judicious mix with in-house facilities rather than incur the extra costs of travel, accommodation and longer absences to the companies own facilities at Dunchurch or Rugby. As one manager said, 'There is no compulsion to employ

our own training organisation and I can go to specialist or cheaper training groups or colleges outside'.

Summary

GEC have shifted workplace relations dramatically in five years. Divisionalisation brought a previously unknown level of responsibility and accountability for economy to local managers. Middle managers were already feeling under siege as GEC strove to inculcate cost-consciousness in Edinburgh. Where the influential Goold and Campbell study located both GEC and Ferranti under a common Financial Control style of management, the restructuring in Edinburgh after the GEC take-over should caution against any interpretation which collapses major differences in corporate structure and management style. These differences became clear when GEC moved to shift the Ferranti organisation in Edinburgh away from technology-centred modes of managing closer to a Financial Control mode. In all aspects of its operations, whatever the mix of capital or labour employed, greater financial returns were demanded by GEC. Improvements in productivity and the policy of out-sourcing for increasing amounts of material inputs means that each remaining worker makes a larger contribution to the financial performance of the company. Yet this is too narrow for measuring the impact of GEC on the Edinburgh workplaces. The sense of labour anomie, persistent labour turnover problems, intensification of work effort, the proletarianisation of intellectual labour and the closing-off of socialised leakages have been some of the costs borne by the workforce in making financial considerations sovereign.

Chapter 10

Labour and restructuring

The trade union response to restructuring

Diversification into civil markets alone held out the prospect of an alternative to mass job losses for the trade unions. After every redundancy announcement the unions would repeat their case for a diversification strategy. For example, when another 225 redundancies were announced in October 1993, the MSF official Matson said, 'We are fed up saying that the peace dividend should not result in ever-increasing numbers of highly skilled workers being thrown on the scrapheap' (*Scotsman* 1 October 1993). This was echoed by Gavin Strang, co-ordinator of Labour MP's GEC Marconi group, who argued that the government should form a 'diversification agency' to help companies such as GEC move into other product markets.

By the time of the GEC take-over the trade unions were campaigning strongly for diversification, especially after the ISC experience and the first round of job cuts. The campaign was given greater urgency by the collapse of the Warsaw Pact and the possibility of a 'peace dividend' being held out. Nationally, the major defence trade unions produced a document arguing for a government-led diversification strategy in the changed international climate (IPMS, T&GWU, MSF, 1991). Locally, the Ferranti unions allied with Labour-controlled Lothian Regional Council, who owned 3.8 million shares in GEC. This enabled Councillor Donald Anderson to attend GEC's AGM to protest that non-defence work rose by only 3 per cent in 1990 when already 1000 jobs had been lost in Edinburgh over the previous 18 months (*Evening News* 6 September 1991).

The campaign for diversification had been taken up locally by Edinburgh District Council and Lothian Regional Council with the setting up of the Edinburgh and Lothian Defence Diversification Initiative (ELDDI). In November 1989 a conference, 'Arms Diversification - An Economic Necessity', was organised by the Lothian Trade and Community Resource Centre and sponsored by the local authorities in Edinburgh to highlight local levels of defence dependency and diversification strategies. Around 60 representatives from local authorities and trade unions attended. ELDDI promoted diversification through commissioned research into local defence dependencies, setting up a product development fund for local companies with grants assistance of up to £20,000 per project and, almost uniquely, involved trade unions in the process as well as employers (ELDDI, 1993; Dabinett, 1993). Research findings

highlighted the centrality of defence industries to Lothian's industrial base, accounting for an estimated 19 per cent of manufacturing employment, with GMav the single most important manufacturing employer in the city (ELDDI, 1993:5).

Ferranti management in Edinburgh, however, seemed to be taking the unions case for diversification seriously enough to establish a Civil Business Directorate to attract civil contracts and also set up a programme to encourage workers to come forward with ideas for adapting existing products to commercial markets. A senior Ferranti manager, Roy Tait, was nominated to head the diversification effort and a special Ferranti mug was awarded to people who came up with an idea the company felt worth pursuing. The workforce had no shortage of suggestions and Tait was soon able to compile a list of more than 500. The Civil Business Directorate were awarded funding from ELDDI for modifying a radar for maritime surveillance for two aircraft of the Scottish Fisheries Protection Agency. Roy Tait said that ELDDI 'demonstrates local support and local togetherness' (DDI, 1994:6-7). Nevertheless, nearly 100 per cent of the Radar Systems Division's work remained military.

The trade unions were more sceptical about claims for 'local togetherness'. Management's commitment of time and resources to the diversification process was inadequate, they claimed, compared to the urgency with which diversification should be pursued. The convener of the AEU, Barnes, argued that diversification should have started at least five years earlier and that the current outlook was the 'gloomiest in his 23 years with the company', adding that he felt that 'Complete closure is a real possibility' (*Scotsman* 27 September 1991). The unions redoubled their efforts and set up a campaign under the slogan of 'Diversification Not Dole'. In November a march was held in Edinburgh demanding government funding to diversify or risk the loss of 30,000 defence-related jobs in Scotland (*Evening News* 16 November 1991). In an attempt to alleviate fears about the slow progress being made on diversifying, Ferranti's Managing Director, Ron Dunn, met officials from Lothian Regional Council Employment Committee, setting out forward plans to underline GEC's commitment to remain a major employer in Lothian. Even the commitment given by Dunn to training apprentices and graduates as part of this plan was challenged by the MSF convener, who argued that the 24 places on a professional engineering course for ex-apprentices that Dunn proposed was lower than the original 40 places (*Evening News* 14 November 1991).

While critical of the company's approach to diversification, the union campaign did not seriously examine previous diversification efforts in the company. Ferranti had attempted to move into other markets on a number of occasions. Then the main problem seemed to be the continuing sway of defence production criteria in moving into commercial markets. Dalkeith developed products with civil applications such as numerical controlled tools. Coming under the aegis of Plessey and based at Alexandria this initiative was a 'spin off' from machining controls, mostly for milling machines, that were devised for radar equipment parts. In 1972, the Information Systems Group at Dalkeith won a Queen's Award to Industry for technical innovation for automatic drafting technology which it had developed. Later, in 1977, the Information Equipment Group merged with the Cetec Corporation of California. This venture was a serious attempt to take advantage of product 'spin offs' and there was a phased transfer of work and equipment to facilities in Glasgow. Yet, according to one manager who was involved in the transfer of Cetec to Glasgow, the non-military side of Ferranti failed because it suffered from deficient marketing experience to exploit the technological leads it had in many areas and, on the technology side, it never really abandoned the tendency to adopt military-technological criteria of 'ruggedizing' its products. He said 'They would end up with Rolls Royce standards when Ford Escort ones would have been sufficient'.

Another attempt at diversification was made in the first half of the 1980s after Scottish Group turnover expanded threefold on the back of the Tornado contract. The Group was reorganised into Ferranti Defence Systems Limited (FDSL) and Ferranti Industrial Electronics Limited (FIEL), which jointly employed 9200 workers. Donald McCallum, later knighted in 1987, was appointed Chairman and Managing Director of FIEL and also Chairman of FDSL. McCallum's promotion of diversification was said to be driven by a personal Christian moral code.

Whatever the motivation the attempt to diversify fits within a well-worn trend within Ferranti. Typically, FIEL's efforts to break into commercial markets foundered. One manager argued that ex-defence people should not have been allowed to manage FIEL because, he said, '... they were too used to working to technological criteria and not the commercial rationale of cost and marketing. Outside people with highly successful commercial track records should have been appointed'.

The trade unions opposed the setting up of FIEL at the time because they viewed it as a tactic employed by the company to 'divide and rule' the workforce and also argued that the cross-fertilisation of ideas between civil and military sides would be lost. Ferranti trade unions wanted both diversification of products *and* keeping Ferranti operating as an integrated business and so were opposed to separating out commercial and military activities. One trade unionist blamed the failure of previous diversification efforts on the defence/civil split being reinforced by the physical separation of the activities. For him, Ferranti's civil business was seen merely as an 'add-on' to the core defence work while product 'spin-offs' were always subordinate to defence contracts.

In pursuing diversification as a means of regulating the contraction of the defence industry, the unions sought a political solution in a hostile climate. Some defence companies seriously considered non-defence means of generating profits in the early 1990s but soon refocused on core activities i.e. defence. The call for diversification was a weaker demand than the trade union proposals for conversion of the early 1980s (Wainwright and Elliot, 1982; TASS, no date[1984]). It implied developing additional activities to existing, declining defence ones and not the outright replacement of the production of military goods for civil ones, more typical of conversion strategies. The unions attempted to build a coalition of political and industrial interests; in practice this usually meant with the Labour Party and the local authorities controlled by Labour.

Diversification campaigns, while taking industrial questions out of the workplace, also tend to be viewed by trade union officials as a substitute for direct workplace action against redundancies. While campaigning for diversification, the unions were always at the forefront of any lobby to place defence contracts locally. For instance, in 1992 dozens of Ferranti workers from Edinburgh participated in a mass lobby of Parliament by UK aerospace unions in support of EFA (*Evening News* 29 October 1992). Bob Hardie, senior MSF representative at Ferranti, made this rationale for linking EFA with diversification at some unspecified point in the future, '... *whilst we hold our breath and wait for some government activity* in this direction [i.e. diversification] there is still a need to maintain an industry from which we can diversify' (Hardie, 1992, emphasis added). The Assistant General Secretary of MSF, Tim Webb, dropped all pretence of supporting EFA on the basis of its operational or technological criteria,

> To begin with, the 40,000 jobs everyone has been talking about are actually 15,000. But the point is this: for us, to be frank, it is all Keynes. It doesn't matter whether the thing flies or not. But it is important to keep the workforce together. The EFA is a development engineers' aircraft ... (Webb, 1993:18).

Without government backing and an explicit defence industrial policy, local diversification campaigns were piecemeal efforts to both substitute for the absence of coherent policy measures and to pressurise for some form of state intervention. Ambitious plans devised by Ferranti in the early 1990s, soon gave way to retrenchment programmes, burying the company deeper into declining defence markets. Ultimately, as a campaign for arresting job loss at Ferranti in Edinburgh, 'Diversification Not Dole', and later ELDDI, were singularly unsuccessful.

The 1993 Strikes

Pay freeze - 'Robbing Pauline to pay Peter'

On 13 March 1992 GEC Ferranti announced that they were implementing a wage freeze because of the 'depressed defence market' (*Financial Times*). As the final stage in the disputes procedure, at a series of Works Conferences held during the week ending 27 March, GEC insisted that the decision was solely that of GFDSL management and that the wage freeze could not be overturned. In response the unions balloted their members for strike action. Although the unions urged a 'Yes' vote, MSF members narrowly voted against strike action by 471 to 464 (MSF Bulletin, 14 April 1992). In the uncertainty surrounding EFA and the ever-present redundancy threat, the unions reluctantly accepted the 'zero rise'; if this also meant no increase for senior managers they were able to claim that at least 'the pain' was being evenly spread. Moreover, the unions viewed the freeze as temporary.

In 1993, the unions were told again that there would be no increase on basic pay and that the company wanted to move completely to a 'merit' pay system, Performance-Related-Pay (PRP), based on individual performance appraisals. The settlement date for annual increases was also moved from April to July. This meant that by the time that the date for annual wage bargaining came around the following year there had been no rise for 27 months. PRP would be paid only to selected individuals, adding no more than 2 per cent to the total wages bill.

This policy was clearly emanating from GEC as part of the 'culture shock' needed to keep the pressure on costs. That year, according to the Personnel Manager, '... there was little money available to be spread around. It was therefore stipulated that to pay reasonable increases to some, rises could only be paid to 60 per cent of the workforce. This advice to pay so many zero 'rises' meant that a lot depended on the way we handled performance reviews and the annual settlement date'. While the 1992 freeze was reluctantly accepted by the unions on the tacit understanding that it would be an exception, the 1993 freeze would mean yet another year without a raise for forty per cent of the workforce. More significantly, the tradition of the company honouring annual wage settlements would be decisively broken. Much rested on the response of the trade unions and their members.

As part of the 1993 salary claim the unions constructed a strongly argued case for a general increase (Minutes, 29 March 1993). First, the company's performance had improved quite dramatically. The unions argued that sales per employee had risen 18 per cent, from £286 million from 5221 workers in 1992 to £317 million from 4,800 workers in 1993 (JOC Salary Claim, Report No. 3, April 1993). Second, GEC were sitting on a cash mountain of £365 million. Third, the company had already made substantial savings from the previous wage freeze while MSF members had fallen behind average market rates of pay, which had risen by some 9 per cent between April 1991 and January 1993. The unions also drew attention to the disparities in salary levels between men and women and disabled and non-disabled staff.

GEC dismissed the union's claim, '... there was no intention of making any offer which would undo the effect the zero increase had made to the Company's survival over this difficult period. There would definitely be no substantial increase, any increase would be merit based and would not be paid before 1 July 1993' (Minutes, 29 March 1993). Management also claimed that sales per employee 'was not a prime indicator' and that orders per employee was a better guide to future prospects (Minutes, 5 May 1993). When the union claimed that orders per employee had risen by 44 per cent between 1992 and 1993 (Salary Claim, Report No5, May 1993), the company retorted that orders were lower than sales and less than budget. At the 5 May meeting, a further 85 redundancies were announced, a virtual freeze on recruitment and the reduction of overtime to 'essential working only'.

The unions persisted in pursuing their claim through the negotiating procedure during May. A 'failure to agree' was finally registered and an urgent Works Conference requested as the final

obligatory stage in procedure on 31 May. The unions immediately recommended 'an early ballot for Industrial Action if there is no change to the Management's present attitude at the final stage of our obligatory procedure' (Salary Claim, Report No 6, June 1993). As the salary dispute seemed set to escalate, GEC unilaterally removed the 'check-off' facility. The check-off system deducted union dues direct from salaries, ensuring the unions a steady income without the physical task of collection. In response the AEEU appealed directly to Lord Weinstock by letter. While Weinstock considered the matter a local industrial relations one, the removal was endorsed by GEC-Marconi group Chief Executive, Dickinson. While the company considered this matter closed on 9 June, the outstanding Works Conference on the salary claim was postponed until the 21 June, 'so that the business managers not available until this date could be present' (Minutes, 9 June 1993).[1]

The formal procedure for the salary claim lasted some three months before it was finally exhausted. It was only at the meeting of 21 June that the company made an offer for a selective increase payable to 50-60 per cent of the workforce, adding no more than an extra 2 per cent to the pay bill. The company stated that this was despite sales performance being 12 per cent behind budget and the outstanding order book falling from 2-3 years of sales to around 1 year at current activity levels. The delay in awarding the Al Yamamah contract meant price levels had to be held constant for at least a further two years. Therefore a selective award was necessary to hold down costs because 'certain skills and capabilities needed looking after to retain them or the business would suffer' (Minutes, 21 June 1993). The unions argued that this would badly affect the already low paid clerical and administrative grades, which had a high proportion of women workers, with some dependent on state benefits to supplement their income. Selective awards would mean a 'rob Pauline to pay Peter' approach to reward 'key skill areas' (Minutes, 21 June 1993). The company refused to consider guaranteed minimum increases although a modest increase for the very lowest paid workers would be considered.

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[1] MSF Report No7, 9 June 1993, claims that 'At the Works Conference held on Wednesday 9th June, MSF Regional Organiser Andy Matson convinced company representatives to accept their procedural obligations with respect to the status quo provision on the issue of the check-off arrangements between the company and the union. The company representatives have agreed to honour their obligations whilst the matter is referred back to national level'. However, the minutes of the 9 June meeting conclude that 'the decision to remove the 'check-off' stands'. The differences in the two accounts may reflect a genuine misunderstanding about what was said at the meeting but should in any case alert the researcher to take extreme care when using supposedly verbatim accounts or campaign materials. This seems especially true in situations of heightened antagonistic relations such as those between GEC and the trade unions.

The procedure exhausted, escalation of the dispute seemed inevitable. Throughout the procedure union negotiators repeatedly held out the threat of industrial action if the principle of a general increase was rejected by the company.

> [MSF] warn the Company that [they] would be doing everything in their power to ensure a ballot for Industrial Action (Minutes 31 May 1993)
>
> Mr Goudie said that the majority of employees were prepared to take strike action and this matter [removal of check-off] would only inflame the situation. Mr Goudie said that he would guarantee strike action was taken (Minutes 9 June 1993)
>
> ... a vote for industrial action was certain if the Company did not change from its current approach ... there comes a time when people decide enough is enough and they are prepared to withdraw their labour (Minutes 9 June 1993)
>
> [MSF] warned the Company that the situation was significantly different this time [from 1992], and unless the Company's position changed there would be a major industrial dispute ... all the unions within the Company will get a mandate for strike action (Minutes 21 June 1993)

Over the removal of check-off, the company simply refused to believe that workers would strike. Over the salary claim, the company weighed up the risks of whether a strike would actually happen and, as in previous years, were prepared to gamble on the unions failing either to get a mandate or, if a vote for action was carried, expected it be a half-hearted affair. But when the other grievances which had accumulated over the previous couple of years, like the wage freeze, redundancies, lowered redundancy entitlements, intensification of the work effort and low morale, were added on to check-off, PRP and the 1993 salary claim a more potent concoction was being prepared. In negotiations the company seemed aware of the risks that strike action posed. Management agreed that,

> the Company did not want an industrial dispute, as this would lose the Company credibility with its customers ... a dispute would result in lost order[s] and continue the downward spiral, undoing the benefits gained over the last two years, and cause more job losses. [The company] outlined what a strike would mean to employees, but it would have little effect on GEC as a whole and would put GEC Ferranti at risk. [The company] said that [they] wished to avert any dispute.

But this risk had to be judged against other criteria,

> However, there was not enough money to pay a general increase. To pay ourselves more than we can afford is just as bad [as the effects of a strike]. (Minutes 21 June 1993)

Merit pay or a general increase?

Some managers recognised the strength of the union's arguments without conceding the value of PRP for the company. As one manager put it: 'From a union point of view, it is probably even better to spread the money thinly between PRP and rises on the basic than to pay zero. It is probably even better to pay a decent one-off percentage rise where people feel better for clearly knowing what they are getting [rather] than splitting it up at intervals over the year'. The convener of the manual workers went into even more detail:

> For the manual workers the new pay system is a morass. Although formally single-grade, manuals still have a basic wage plus a bonus formula, now measured day work, with a discretionary element of PRP added on. There has been no increase in the basic since 1991, so the PRP proportion is always increasing while the basic, on which most benefits are calculable, is declining. The monetary value of the individual's performance is constantly being judged. The threat is always there of no increase in the PRP after assessment but also that PRP portion which has been awarded in previous years may be cut back. There is a formula which is supposed to cushion the PRP element against falling below or rising above a certain level but the discretionary part can erode that. Once a manager gets his labour costs allocation it can be carved as he sees fit instead of across the board or percentage rises for all.

Some white collar workers in GMav also felt that their improved salary position during the 1980s was being eroded. A senior MSF representative charted the history of pay since the 1970s and while conceding the effect that PRP might have in resolving the perennial problem of labour retention, recognised its profound implications for the trade unions:

> A Fair Wages award was made in the late 1970s of 11 per cent to try to recover some of the ground that was lost because of Labour's incomes policy and Ferranti being under government tutelage at that time. Things improved in the 1980s to take Ferranti into the top quartile of average wages, which GEC is clawing back. The move to PRP means that the turnover of younger and more mobile workers, especially in software, can be stanched by flexibility in discretionary payments. But once collective bargaining is lost the unions' role is diminished.

Some Ferranti managers even saw potential disadvantages for retaining labour which PRP might even exacerbate instead of resolving:

> PRP gives GEC flexibility within a fairly tight rein. In justified cases the PRP upper limit can be waived. But where people don't get the rise they expect the option of job-hopping

> begins to look attractive, especially to comparable, if less technically-exacting firms like Motorola and Hewlett Packard.[2] We still have something like 10 per cent turnover of labour every year. When Motorola or Hewlett Packard can offer up to £5000 more than we can for a particular skill then we have a serious retention problem. Alternatively, when a skill is in high demand and short supply the option of contracting out on a constancy basis at £26 per hour is also an attractive option.

The same manager reported a particular instance of the increased power of technically indispensable labour,

> When key individuals take these options they sometimes return after finding that what they left wasn't so bad after all. Recently we lost a few key people with specialised capabilities in power supply technologies. When one of them didn't get the rise he was looking for he joined a small specialist firm and took the five other key individuals from his department with him. They are gradually returning after two years away and we expect them all to have returned within eighteen months or so.

PRP, designed to fragment union strength, had the paradoxical effect of increasing the potential power of smaller groups of workers. The basis of power for labour seemed to shift from company-wide or even sectional strength to narrower forms of individualised power based on function, skill, experience and knowledge of other labour market opportunities. The fact that the department has been without six key workers for two to three years, were prepared to rely on the failure of other firms to hold them and would still offer the six their former positions indicates the vulnerability of PRP in frustrating expectations and speeding up turnover.

A further aim of PRP was therefore to remunerate engineers attractively enough as engineers instead of needing to adopt a management skin to further their career prospects. An engineer's income could now be improved by being 'a first class engineer instead of a second class manager'; in principle an engineer could be paid the same rate as the Managing Director after assessment. While this has not happened yet (and the possibility must be extremely remote), the link between managerial grades, promotion and reward has now been broken. The result was that some individuals were known to have received huge increase, with the upper-limit on PRP waived, while most were thought to have had very meagre rises or even none at all over three years. Since PRP is an 'invisible' reward system it is impossible to quantify with any

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[2] Phrases like this were commonplace, contrasting the inferiority of firms operating in commercial markets to Ferranti's/GMav's technological superiority. The grip of technologism, the belief in

precision what the pattern has been but the impression of accentuated inequality seems to be an essentially correct one.

Blue and white collar trade unionism

PRP was designed to have an uneven impact throughout the workforce according to judgements about work performance and local labour market rates. Public and collective forms of periodic wage determination as an annual entitlement would be marginalised or even abandoned altogether in preference for individualised and private discretionary salary structures. Although promoted as part of the 'harmonisation' process, PRP seemed set to exacerbate existing divisions among the workforce.

A unified response to PRP and the wage freeze required that the manual and staff unions overcome their traditional enmity towards each other. The restructuring process itself was eroding the gulf between the two unions at the edges, undermining the traditional blue collar dominance in the workplace. At the time of the GEC take-over, MSF, the union which superseded TASS, recruited another layer of members, while the AEU's position seemed unassailable. However, as new technology was introduced into the labour process, white collar workers often found their influence growing in the same proportion as that of manual workers declined. On occasion, this process led to disputed areas of control of the technology. When Computer Aided Manufacture was introduced, for example, the operators who worked conventional machine tools wanted to retain some control over what they saw as 'their' machines by getting involved in the planning, which had been traditionally done by white collar planners. Suspecting that the company wanted to reduce the cost of operating the new technology by favouring an increased role for the lower-paid machine operators in the planning, computer programmers and planners walked out on strike. A 12 week strike ensued, in which the striking planners were funded by a levy of other white collar staff. The entire planning function was granted to the white collar workers.

The manual unions had themselves been divided among a number of general and craft unions but by the late 1980s the AEU alone represented manuals. Until the late 1980s, the AEU operated an unofficial closed shop and were regarded as the dominant force in the company, with power bases in the production department, including the machine, assembly and fitting

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engineering solutions to all problems, and a disdain for volume producers, continues to exert a

sections. This strength was based on the centrality of skilled workers to Ferranti's comprehensive in-house approach to the labour process. TASS was viewed as a bit of a sham union by the skilled workers, while many AEU stewards were contemptuous of their role in the workplace. An MSF shop steward recalled the phrase that the AEU convener liked to use to reflect TASS's dependency on the AEU's bargaining strength, 'We pull the barrow to the top of the hill and when we get to the top of the hill, TASS climb on board for the ride down' . Thus when it came to annual wage bargaining, the AEU would settle a couple of weeks before TASS, who would subsequently get almost the same percentage rise. However, while the manual unions set the trend for wage bargaining, Ferranti tried to retain scientists and engineers through giving them good benefits, which were largely denied to manual workers. A senior shop steward with the AEU said, 'It was around 1978 before we got a decent pension scheme and 1983 for sick pay. The manuals were always the poor relations and there was a certain amount of snobbery on the part of some of the staff'. Among some white collar workers, for instance, the manuals were known disparagingly as 'brainless checkies' [ie. workers whose work would be inspected]. The friction between blue and white collar trade unionism was also political, with TASS seen as a left wing trade union while the AUEW were identified as right wing.

Probably the most important factor affecting relations between white and blue collar unions was the disproportionate impact, noted above, that restructuring had on production, ancillary and maintenance workers, mainly manual occupations. This shift irrevocably re-ordered the respective strengths of white and blue collar unions. A leading MSF shop steward had this impression:

> The ratio of staff to hourly paid has shifted from 4:5 to 5:1 at a guesstimate. This has also been reflected in trade union membership rates which have changed considerably since the days when the blue collar had 2000 [members] to 200 white collar. White collar unionism had phenomenal growth in the 1970s and the 1980s and surpassed blue collar [membership] in the late 1980s.

Table 9.2 indicated that combined, EITB categories Operators and Skilled Manuals amounted to 553 workers, some 15 per cent of the total workforce of 3383 in 1994. This was a fall from 21 per cent in 1991. On the other hand, categories Technicians and Graduate Engineers grew

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powerful pull despite attempts to simulate markets in procurement and corporate restructuring.

from 44 per cent to 49 per cent of the workforce between 1991 and 1994. Another MSF shop steward confirmed this view:

> Over the period of the restructuring ... and the general trend in engineering towards industrialising the white collar section, like just doing away with a lot of blue collar skills, the introduction of new technology has meant that in GEC the blue collar workers have taken an absolute hammering. They are now a tiny minority of the workforce and that is not an exaggeration. For example, in my factory there are 1200 employees in Radar Systems at Crewe Toll ... [I]n the actual production end there is maybe 200 involved and, out of them, you will be lucky if a hundred of them are blue collar. Less than a tenth of the workforce are blue collar. Clearly, over the space of seven or eight years there has been a radical shift in the power of the shopfloor unions [compared] to the staff unions.

Such a shift was also reflected in the response of the former convener of the AEU:

> Manuals now see the need to come together [with the staff unions]. The staff have not been immune from the cuts either. We now have a joint bargaining reference which I have to constantly remind the [AEU] members of. Our fates are locked together now.

Although relations have been uneasy between the AEU and MSF a working relationship was thus developed with the advent of single grade status and the inverse fortunes of the respective union's membership bases.

<u>One day strikes</u>

After some initial hesitancy, both unions united to resist GEC's proposals for PRP. The MSF shop stewards committee voted to ballot the membership with a recommendation to take industrial action. In the process the AEEU was forced to respond to the MSF approach for united strategy against PRP but even this reflected the changed relations between the unions. One MSF steward said 'Before the actual strike ballot we were the biggest union, the dominant union ... [and] [i]n the consciousness of the workers it was seen that MSF were leading the way'. Against criticisms from more militant shop stewards, who wanted to form a Joint Shop Stewards Committee between the AEEU and MSF, control of the campaign for a joint strategy of industrial action passed to the two separate Negotiating Committees of the AEEU and MSF. The Negotiating Committees were composed of the senior shop stewards in each union and the conveners, and although they worked independently of their respective shop stewards committees, were to collaborate on setting out a joint strategy. One militant in the MSF claimed that when it came to practical unity the union leaders had to be forced into it:

> For example, when it came to the vote to go for a ballot for industrial action, ... traditionally they held office meetings, seperate office meetings, with the AEEU in one corner of the factory and MSF in the other. And it would not just be two meetings in the factory, there would be eight meetings going on because there would be four MSF and four AEEU meetings at various locations [throughout the city]. So we decided to call a mass meeting in the factory with AEEU and MSF members invited independent of the leadership ... At the meeting, who turns up, but the AEEU convener and the MSF convener and they take the meeting. Now of course I am a bit pissed off ... but at the same time, I am delighted because they had been forced into leading the meeting off and been forced into showing some sort of unity.

Although a unanimous vote for strike action was passed at the meeting, the same shop steward felt that as a result of weaknesses in the local leadership the seeds of disunity were still present:

> First of all, we had to force them to come together. Secondly, no meetings were held at the other sites. We were the strongest site, we did not need them to come down to tell us to vote for strike action. They should have been at South Gyle, they should have been at Silverknowes, in the weaker sections trying to build the mood for a fight. Already you could see the problems. I don't think it was deliberate. I think it was because they didn't know how to organise a fight. And I was asking them, 'When are you going to go to South Gyle, when are you going to go Silverknowes', and they said, 'The stewards there don't want us at their meetings'. It was just a lot of rubbish ... the warning signs were already there that it was divided and they were going down the road of least resistance. They would hope to avoid strikes and whatever.

Despite these apparent difficulties, a strike looked certain after a secret ballot of union members. Although the combined union membership voted 60:40 in favour of action with a majority of 500, the staff vote was closer with 55 per cent of the 1134 MSF votes and two-thirds of the 820 AEU members voting for action (MSF Bulletin, 28 June 1993; *Evening News*, 29 June 1993). The union hoped that the ballot result could be used as a bargaining tool to let the company see the anger generated by PRP. The company, meanwhile, made little headway to meet union grievances over PRP. Andy Matson, MSF National Official, commented 'When describing the company's attitude, intransigence is the word that springs to mind. They have given no indication that they are likely to come forward with a better offer' (*Evening News*, 29 June 1993).

Again the union leadership came under criticism from militants for the way that they conducted the ballot.

> We got the ballot result and it was interesting when you look at the factories and the way they voted. They counted the boxes separately ... They had the AEEU boxes, and at South Gyle I think they got defeated, at Silverknowes I think they just won and at Crewe Toll it was overwhelming ... The MSF got cuffed at South Gyle, I think it was close again at Silverknowes and overwhelming at Crewe Toll. Up until the Crewe Toll vote, we were getting beaten; when the Crewe Toll boxes were counted it was a significant victory. I can't remember, maybe 60:40 or something like that, so it carried the day. But already the company were aware of what the weaker sites were because they did the ballot in front of the company. They should have sorted all the ballot papers together and counted them together. But again, they had no idea how to play the game tactically.

The evident unevenness between sites and the differences between the unions perhaps go some of the way to explain the company's 'intransigence'. If any action did come off it had the prospect of being short-lived. Such a reading seemed to be borne out when GEC actually organised buses to transport workers, including. of course, the sections that voted against industrial action, to the mass meeting at Meadowbank Stadium in the city. This ploy by the company to undermine the ballot result at the mass meeting failed. At the 2300 strong meeting, the debate centred around whether the industrial action should take the form of an all-out strike or a series of one-day strikes, not whether to take action or not. The platform argued for one-day strikes, with Larry Brooke, an MSF National Officer, declaring that 'It is time to fight back' (*Evening News* 1 July 1993). After some debate it was recommended that one day strikes take place to begin with. These were scheduled for Thursdays. The unions reasoned that with the half day shift on Fridays the company would effectively lose two days production with a minimum loss of earnings to the striking workers. Union leaders further warned GEC that an all-out stoppage would be called 'if it retaliated against striking staff or eventually failed to negotiate' (*Evening News* 2 July 1993). The meeting was told that some projects were reportedly already behind schedule before the walkout through informal go-slows and an unofficial overtime ban. While the trade unions did not want to be committed to a percentage figure for basic pay, they said that they would settle for a rise of around 3 to 4 per cent, particularly since the pre-tax profits of GEC of £863million were up 4 per cent on 1992. Depending on which source is consulted, the vote at the meeting was either 'unanimous' or 'overwhelming' for one-day stoppages. (*Evening News* 2 July 1993; Interview with MSF convener)

This was the first Edinburgh-wide joint strike action between blue and white collar unions ever and the first strike in the company since 1979. The first strike day was well supported among the lower grades, while management grades, who were exempted from industrial action, attended work as normal. The negotiating rights of staff were recognised up to technician level but did not include more senior grades. While they could be individual members of a trade union they had no collective bargaining rights. Picket lines were set up at the factory gates. Accordingly picket strength reflected the willingness of different sites to strike: 'The first day of the strike we had about eighty on the picket line [at Crewe Toll], at Silverknowes I believe there were about 40 and at South Gyle, I think you were talking about 6. The first day was good, it was quite solid. South Gyle had a few problems but the rest of the sites were pretty solid, apart from the management areas.' The same trends continued the following week during the second strike. Crewe Toll stayed solid, with increasing numbers turning up for picket duty buoyed by the refusal of suppliers and contractors to cross the line. Meanwhile things deteriorated at South Gyle, with stewards receiving reports of increasing numbers crossing the picket line there. Matson, the MSF full-timer, put a brave face on it, arguing that the announcement of increased GEC Marconi profits the previous week 'do nothing other than to support our claim that, after a two year wages freeze, this company can afford to increase the wages of each and every one of our members' (quoted in *Evening News* 7 July 1993).

Even at this early stage, the extreme unevenness across the city threatened united action. Trade union militants and activists blamed the leadership, particularly the AEEU. The strikes had coincided with the beginning of the annual holiday period and the AEEU convener had been on holiday during the first two weeks of the strike. When he returned, rumours circulated that the AEEU were prepared to recommend acceptance of a revised management offer. However, after a joint meeting between the MSF and AEEU strike leaders it was agreed to go ahead with another mass meeting with a view to continuing the action. The meeting, now bigger since workers were returning from holiday, voted for a third stoppage. Although the unions knew which sites were weak, they rejected management claims that fewer than 1000 workers had joined the action. Instead they believed that EFA was falling behind schedule and that the tough penalty clauses in the contract would force GEC to give in (*Evening News* 13 July 1993). Management grades and senior staff belonging to MSF had been invited to the meeting but failed to turn up.

In the meantime management had sent letters out to the 57 per cent of staff who were to get a PRP award of up to 6 per cent and to 43 per cent who would receive nothing. The union issued a leaflet which turned the company self-image against them:

> THE COMPANY'S UNILATERAL SALARY REVIEW DOES NOT MEET YOUR CLAIM FOR AN INCREASE FOR ALL MEMBERS. IT WILL NOT RETAIN AND MOTIVATE EMPLOYEES INVOLVED IN A TEAM EFFORT TO PRODUCE WORLD CLASS AVIONICS. GIVING SOME MEMBERS SOME OF THE MONEY THEY WERE ENTITLED TO IN APRIL 1992 DOES NOT ADDRESS OUR DISCONTENT. SALARY LEVELS REMAIN STUCK AT APRIL 1991 LEVELS, WITH ANY PRETENCE OF A STABLE AND FAIR CAREER STRUCTURE SACRIFICED TO EXPEDIENCY, IN A CRUDE ATTEMPT TO BUY OFF ENOUGH PEOPLE AND UNDERMINE THE PRESENT ACTION.
>
> SOLIDARITY BETWEEN COLLEAGUES AND THOSE FACING THE PROSPECT OF AT LEAST ANOTHER 12 MONTHS WITHOUT A WAGE INCREASE REMAINS THE KEY TO SUCCESS!
>
> (GEC Marconi Avionics Strike Committee, 13 July 1993)

With the move to effective selective rises, the unions decided to take a vote on whether to escalate one-day strikes to two days or even all-out action and planned to meet with 300 management members of MSF who had not yet been called out. MSF stressed that management members would also benefit from any general increase awarded as a result of the action and that managers took part in the ballot for action which others were now prosecuting. Company briefings and personal letters to senior staff claimed that they would be in breach of contract and threatened dismissal should they engage in industrial action (*The Scotsman* 19 July 1993). MSF clearly felt that many of their management members were willing to join the dispute and consulted the MSF Legal Department for advice on the company's right to dismiss striking managers. Despite getting legal backing, the unions had little success in convincing managers in MSF to defy the company by striking.

The issuing of selective rises backfired on the company. Things even seemed to improve at South Gyle with the third stoppage. Strengthened by workers from other sites, around fifty pickets were reported at South Gyle to be having some success in getting solidarity from supply deliverers (*Evening News* 15 July 1993). The unions claimed that of the 900 who worked at South Gyle about 250 went in and they were mostly managers. The pickets at

Crewe Toll reported that even fewer were going in than previous weeks. One picket said, 'Most of those who are working are managers who have been threatened with dismissal if they go on strike or take a day's holiday' (quoted in *Evening News* 15 July 1993). Matson, for the MSF was pessimistic about a settlement, 'It has been forced on them. Many of the people on strike today were offered pay rises. The company have failed in their attempt to buy them off. My ideal outcome would be that we go to the meeting with a new across-the-board offer from the company. But I think that unlikely' (*Evening News* 15 July 1993). Yet the improvement in morale among the strikers at South Gyle was temporary. From Crewe Toll, South Gyle still looked like a weak link:

> On that strike day [Crewe Toll] had over 120 on the picket line. You could see from 80 to 100 to 120, the thing was built up and gathering momentum. Certainly at my factory, because we were fighting every day to build the pickets, to build the mood, whereas at South Gyle and Silverknowes, that was not happening. At Silverknowes, there was a better layer of stewards and they were doing what they could, what they knew how to do - they were trying their best. At South Gyle they weren't even trying. The thing was caving in there'.

As the oldest factory with the longest traditions of union organisation, Crewe Toll was expected to provide the leadership for the strike. In discussing the roots of trade unionism at Crewe Toll, one worker at South Gyle thought that the concentration of male blue collar workers there was a significant factor:

> Crewe Toll has always been far stronger for unions than South Gyle mainly because Crewe Toll has a machine shop. Turners have always been a bit more militant than women assemblers.

At Crewe Toll, however, the involvement of women workers on the picket line was highlighted as an important development during the strike, with one of the expressed aims of the strike to win rises for low paid women workers. This had a special salience in the aftermath of the strike of mainly women workers at the doomed Timex factory in Dundee.

Two thousand workers turned out during their holidays at the mass meeting the following week. The size of the mass meetings, during the holiday period, was one indication of the continuing strength of feeling among the workforce. Again there were reports that key projects were being delayed because of the industrial action (Minutes, 21 July 1993). One worker in the Radar Division argued that key MOD contracts - Blue Vixen, Kestrel and ECR90 - were

all behind schedule. At Silverknowes the unions claimed nearly 100 per cent support for the action and reported that 'Production has been hit on the TIALD system for the Tornado as it requires 5 days of uninterrupted test runs' (MSF leaflet, 4 August 1993). The people remaining at work on strike days were expected to cover as much work as possible. When strikers returned this created divisions in the sections and led to recriminations. For example, before the first day of action took place managers asked engineers for their login codes and passwords for the desktop publishing machines since each engineer had their own account and as there was no central file server individual contracts had their own server. An engineer recalled that when asked by the supervisor for codes and passwords to allow access for the one individual in his section who was prepared to work, 'everyone told him a lot of bollocks basically', logged off, changed permissions and left messages 'in no uncertain terms about his scabbing'.

Even as the action seemed to be biting, however, the strike leaders seemed eager to find a settlement. The design laboratories were particularly affected by the manual workers' action. In order to progress work design staff needed to collaborate with production areas. This time the union's position had moved from seeking a meeting with the company on the basis of an across-the-board basic rise to a willingness to sit down with the company without precondition to reach agreement. The mass meeting voted overwhelmingly on a show of hands for a motion to continue the action until the unions had a realistic settlement to put to the members. The mood of the meeting was hostile to ending the action: 'One worker's suggestion that the strike action be called off and replaced with an overtime ban while talks were going on was met with a chorus of "No"' (*Evening News* 22 July 1993). GEC were said to be 'disappointed' at the outcome of the meeting but stuck by the mantra-like principle of PRP as the basis of any settlement: 'Our decision to pay a selective review is based on the need to pay skill groups appropriately' (*Evening News* 22 July 1993). Again, on the following day, a GEC spokesman confirmed the company's position, 'We have certainly not closed the door to discussion. We continue to have an offer on the table that we will review pay claims on a case-by-case basis' (*Evening News* 23 July 1993).

The contested settlement

The fifth one day strike was called off to allow talks to take place after informal approaches had been made, although who exactly initiated this is far from clear. The day before 'exploratory talks' began a mass meeting of some 2,000 workers had again voted

overwhelmingly to continue the action. While some AEU shop stewards were hostile to suspending the action they were reassured by the convener that action would be resumed immediately should there be a lack of progress made through talking (Minutes, 23 July 1993). A spokesman for the strike committee described the talks as a 'breakthrough' and claimed that up to 65 per cent of GEC workers had been involved in the four successive strikes, hitting production severely (*Evening News* 26 July 1993). An MSF spokesman said that local management wanted to talk to their bosses and 'will tell us today if there is enough common ground to begin formal negotiations'. He also indicated another shift in the unions demand for an across-the-board increase: 'We want to get everyone an increase *although it need not be the same*' (quoted in *Evening News* 26 July 1993, emphasis added).

GEC were also meeting to assess their handling of the dispute. An internal GEC meeting between local directors and executives from Rochester Head Office was reported to have lasted longer than expected. Yet the union seemed to be sending out mixed signals :'Union leaders have made clear that an indefinite strike remains possible if their demands are not met', with MSF, AEU, TGWU wanting the original claim for 3 to 4 per cent across-the-board rises met. On the other hand, a spokesman for the strike committee conceded the principle of PRP and thought that a more moderate award may be enough:

> We have to accept that the company have implemented this pay award. What we have to do is force it to come up with more money for those who haven't received anything. We actually believe the company have addressed their market needs with their selective pay awards. What we're saying is that there should be a social element as well, particularly for those members who have received nothing and are low paid. If we are convinced that the discussions have been meaningful, we will not be taking industrial action this week, but if we think that the company are wasting our time, then we will be taking further action on Thursday. (quoted in *Evening News* 27 July 1993).

At the first meeting on the 27 July GEC conceded rises of between 2.2 per cent and 3.2 per cent for 70 of the very lowest paid workers (Minutes). Although encouraged by the offer of 3.2 per cent for the lowest grade, at the meeting the following day MSF complained that the company were making it difficult for the union 'to sell the package' to the members because small numbers of people in lower grades were excluded from the proposed rise while other members in higher grades were being offered up to £2,000 to persuade them to stay (Minutes, 28 July 1993).

The strike planned for that week was 'postponed' to allow talks to continue, although the union had no concrete offer to put to the membership at this stage. A spokesman for the unions said, 'It would be foolish to call a strike while negotiations are going on. It is difficult to say how things are going because we are waiting for the company to come back with their response. We can say that a lot of areas have been explored' (*Evening News* 29 July 1993). On Friday 30 July the MSF stance seemed to harden again. They argued that the pay award should apply to all members and that the pressures for industrial action remained. By the time of the next meeting on Monday 2 August, the leading MSF negotiator and JOC secretary had left the company to take up a position elsewhere. His replacement immediately accepted a revised offer which gave some of the low paid an increase of up to 1 per cent. The basis of the deal was that a small number of the lowest paid workers, involving no more than 201 workers, would get a rise, adding an extra 0.2 per cent to the company wage bill (Report on Special JOC, 3 August 1993; MSF leaflet, 4 August 1993). This was recommended by both Negotiating Committees to their respective Shop Steward Committees. The AEEU shop stewards vote was equally split at nine votes for and nine against accepting the deal and was only carried when the Chairman used his casting vote to carry the resolution (Minutes 3 August 1993). The MSF shop stewards, against the recommendation of their Negotiating Committee, voted narrowly to continue the action by 10 votes to 9. The recommendations were put to two separate mass meetings instead of the usual single joint mass meetings. The AEEU held their meeting first which, after some rancorous debate, voted by secret ballot to accept the deal. The MSF members now held their meeting in the knowledge that the AEEU had called off the action, but again voted narrowly to reject the proposed settlement.

Over the following weekend things also shifted in the MSF camp towards calling off the strikes. A steward who wanted to continue the action said,

> ... [O]ver the course of the weekend, the National Officials and the full-time Officials had been on to the MSF Negotiating Committee, who had wanted to pack it in anyway and recommended that we hold another Shop Stewards meeting on the Monday, with a recommendation to go back to work. Over the weekend, the Negotiating Committee nobbled the middle ground stewards, convinced them about going back to work, especially after the AEEU vote, and at the Shop Stewards' Committee we got hammered.

GEC's position was hardening and they wanted to bring the dispute to a head by sending out dismissal notices to the whole workforce. The Personnel Manager in Edinburgh describes how his role over that weekend was crucial in resolving the dispute:

> Four thousand letters were made out and ready to get the names attached and sent out to dismiss the striking workforce. After [four] weeks of one day strikes! I was able to resolve it by meeting two union officials to sort out a return to work. I let them know the gravity of the situation and they asked, 'Bluff?' to which I said, 'Last week - yes; this week - no'. They then primed their stewards before the meeting and the vote for the return to work was carried. The cost of the return to work amounted to £16,000 out of a £60m payroll.

The MSF JOC finally voted to recommend ending the action on Monday 9 August. An MSF Bulletin outlined their main concerns in cancelling any further action, none of which positively argued that the settlement would meet any of the strike aims. The following were their main areas of concern:

- The JOC Reps assessment of the likely level of support in their areas.

- The fact the AEEU now have an agreement with the Company.

- The threat by the Company to dismiss employees who participate in future Industrial Action.

- The level of attendance and narrow majority vote on 5th August i.e. a majority of 55 to continue Industrial Action.

- The likelihood of achieving an improvement in the Company offer in the immediate future.

- At the mass meeting at Meadowbank Union members clearly stated that they would defend any member dismissed during the dispute. Our ability to do this is now questionable.

(MSF Bulletin, 'Report To MSF Members', no date)

The earlier vote by the AEU to call off the action represented a serious blow to the resolve of the MSF strike leaders. When nothing was moving physically on the shopfloor the impact of the action was obvious. However, when jobs on the shopfloor were moving again some MSF members became disheartened about the effectiveness of the action. When the proposed settlement was recommended to the MSF membership, the final meetings were fragmented into a series of departmental and sectional meetings. One MSF member recalled the anger this created among the workers who had been most active in supporting the action,

> People said, 'What's the point? We've come out here, we've lost money, we've been on strike and where have you got us? Your urging us to go back to work with no deal, no nothing'.

The overall vote was sufficiently in favour of acceptance of the deal to end the action, yet sufficiently divided as to leave a legacy of bitterness and cynicism about the effectiveness of the action and indeed of the union itself.

Just how serious GEC were about mass dismissals is difficult to determine. This would have raised a relatively minor and ill-conducted, though acrimonious dispute into a national *cause celebre* with international ramifications. It must be doubted whether GEC wanted such attention at the gates of Crewe Toll, where one of the most prestigious technological projects in European industry would have been subject to, at least, severe disruption coupled with the possible withdrawal of Spain and Italy from ECR 90 and enforcement of the back-to-back indemnity clause by the German radar integrators. On the other hand, the wholesale dismissal of workforces had been evident in a few celebrated disputes during the 1980s, particularly News International's print union-busting move to Wapping in 1986. In Scotland only weeks earlier, the Timex Corporation had dismissed wholesale the, mainly female, striking workforce at its plant in Dundee.

When rumours circulated in the second week of the dispute of GEC taking a similar tack, the MSF convener considered the chances of GEC 'doing a Timex' - closing the Scottish plants and moving the work elsewhere - as extremely remote, arguing that, '1500 of our members are graduates. You cannot replace them with people straight off the dole' (*Evening News* 2 July 1993). Such a view was supported by Carol Reid, Business Editor of the authoritative journal *Janes' Defence Weekly*:

> When the decision to form GEC-Marconi Avionics was made, journalists asked whether it wouldn't be easier, from a purely operational point of view, to concentrate the activities, bearing in mind that GEC's aim was to have this big avionics house that could provide a total system. We wondered how they were going to manage this with sites in the north of England, Scotland, Kent and other parts of the country. They said that they had no plans to consolidate the activities in Scotland with those of England and because of the expertise of the Scottish units, they had fairly high-powered people and complex technology on these sites. So I think initially you would have to rule out any plan to consolidate them. I think at the moment, in the short to medium term, that it could not be an option from the purely industrial action point of view. *I think the unions could argue they have GEC over a barrel on that one* (quoted in *Evening News*, 2 July 1993, emphasis added).

This was the impression GEC had consistently presented since 1990. For example, in 1991 Lord Weinstock had told a meeting of Labour MPs that the Edinburgh factories were central to GEC's future business plans and described the highly advanced airborne radar development and manufacture at Edinburgh as a 'world beater' which would form the 'main core' of the business for many years to come. He was reported as saying: 'The Edinburgh factories definitely have a long term future. When we bought them, we bought them as a major investment. They cost £270 million. We are not going to throw that away ... GEC Ferranti is a major part of our business and we see the Scottish operations as crucial to the whole firm' (in *Evening News* 2 May 1991).

The then convener of MSF was convinced that this argument largely deflected the impact of the GEC threat of mass dismissal: 'The argument that we used to counter that [threat] was that we had 1500 graduates in our membership and that the company would not be able to replace them overnight and that seemed to sway a lot of people and reassure them'. Yet this is disputed by a more militant MSF shop steward. He argues that with the weakness of the strike at South Gyle, the AEEU decision and pressure from national and local union officials, mass dismissals provided a convenient excuse for ending the dispute in the face of militant demands to escalate the action: 'The threats of the sackings really got to them and that was the argument they used to justify their position. They said [to me] "do you want everybody sacked ..., so that you can prove your point and go ahead with this futile dispute"'. His view of GEC's mass dismissal threat was that of a desperate gamble after being unable to beat the strike earlier:

> After the first day stoppage, everybody got delivered to their houses a notice saying that if they continued with further industrial action they would be subject to disciplinary action. The second day the action took place there was even more folk involved and nobody was disciplined. After the third day of action they were talking about sending out disciplinary notices and threatening to sack people.

The same steward argued that had GEC's bluff been called by MSF, as the largest union with a fresh mandate from their members, to '... picket out the best sections of the AEEU, keep the strike going and try to rebuild it from the rank and file, build it on the gates of the factories, which was a realistic proposition at Crewe Toll certainly', then the company would have had to back down . This scenario was never put to the test.

Instead what needs to be explained is - given the particular forces and dynamics of the dispute why this particular outcome and what impact did it have on the restructuring process? One factor that helped to seal the fate of the dispute was the decision, in what proved to be the final week of the dispute by the one of the main strike leaders and MSF JOC secretary to leave the company for another position, ironically, as the leader of an 'Arms Conversion Project'. As a charismatic and forceful advocate of the 'Diversification Not Dole' campaign at Ferranti, the MSF convener was ideally suited to the post. Yet as leader of MSF in Ferranti, in the midst of arguably the most serious dispute in the company's fifty year history in Edinburgh, the circumstances surrounding his departure were bathed in recrimination. Indeed, alone of the people I spoke to, he viewed the outcome of the strike as a victory for the trade unions in the way that a settlement was arrived at:

> We blamed [the dispute on] the change in the working relationship within the company and it was the company who had to send the management up from down south to speak to the management up here. It was also the company down south who spoke to the unions on the telephone to discuss the ways forward and it ended up with a solution being implanted, if you like, from GEC management at a higher level over the heads of the local management, which indicated there was an acceptance that the role that the trade unions were playing was the best role for the long term and the future. So if there was a winner it was obviously the trade unions.

Such an assessment contradicts other evidence, both from local senior managers and shop stewards, and union and non-union workers. First of all, the unions settled for meagre selective rises and not the across-the-board payments they claimed at the beginning of the dispute. Second, PRP was accepted as the basis of future salary increases, breaking the linking of wages with annual rates of inflation and ending collective wage bargaining; at the time of writing there has not been a single annual across-the-board rise since the strikes. Third, the company have effectively marginalised the union presence in the workplace for the time being, ending the check-off system for collecting union dues at source and abolishing 100 per cent facility time status for conveners. Finally, the way that the strike ended badly damaged the credibility of the trade unions in the eyes of both the union membership and with GEC managers. From different perspectives, those interviewed felt that the outcome of the strike crucially weakened resistance to further restructuring. Managers tended to see the union's position in these terms:

> Recently we had a strike among the staff when performance related pay was being introduced but it fizzled out in the end. Consequently the unions lost a lot of their

members, as the idea of PRP became more widely accepted. Since then, the trade unions have become much more sensible and realistic and industrial relations have settled down. I can speak to the relevant union people in here and find that they are just as concerned about the condition of the company as I am. After all, here we have highly educated, articulate people working on sophisticated high technologies. The staff might still emotionally dislike the changes that have been happening but intellectually they accept them as realities which are necessary.
(Personnel manager)

Since [the early 1990s] we have had some minor disputes, but the pressure has really been on the trade unions. To be honest, Ferranti gave the trade unions respect for far too long, long after they were in a position to demand it ... Under Ferranti the hourly paid had what amounted to an unofficial closed shop. This has now declined as the union has been impotent in the last few years to resist recent changes, although many continue to be members for insurance against health and safety difficulties.
(GEC manager)

Management now have a tougher attitude to organised labour. The feeling of protection from change in the workplace by the trade unions is no longer there. The trade unions are impotent, with their role restricted to health and safety issues, which the company is bound to treat seriously anyway.
(Projects Director)

Union activists stressed the extent of the damage to the credibility of union organisation,

They did not understand the ramifications following a settlement like that and thought it would be business as usual after that, back to normal and back into the cosy negotiations with management ... They did not understand the implications of selling the members out after campaigning hard to get them out on strike in the first place ... People were gutted, people were disillusioned ... I am still trying to re-recruit people to the union who packed it in after the sell out.
(MSF convnener)

Towards the end of the strike the unions seemed to have a fatalistic attitude towards the action. Now the union has no credibility with either the management, who take a disdainful approach to them, or with the membership, who are completely disillusioned.
(MSF member)

Workers in sections where the unions were weakest before the action became even more disenchanted,

The unions here don't seem that relevant. During the strike there were more and more people working, like myself, in my department than striking. I left when they stopped deducting the subs out of the wages. I never bothered to re-join.
(Assembler)

> I personally am against strikes on principle. There are no winners in a strike. The strike was totally disorganised and they returned for nothing in the end. Even though I am still a union member, they are non-existent now and had too much to say for themselves in the past.
> (Quality inspector)

Seven weeks after the strikes were abandoned, GEC announced a further 225 redundancies in Edinburgh (*The Scotsman* 1 October 1993). Bloodied and discredited, the union response was even more feeble than it had been to earlier announcements.

The abolition of the check-off system undoubtedly had a symbolic importance for showing where the balance of workplace power lay. It represented management's ability to take unilateral action against the unions, in a way that was seen as vindictive and petty by the unions, while non-union members among the workforce felt that the unions had reaped the bitter fruits of their own ineffectual posturing. By cancelling check-off, the company hoped to further weaken the union's membership base. While this move saved the company very little money, stopping the deduction of union dues at source lost management an automatic measure for gauging union strength in terms of the density of membership: 'Trade union strength has become something of an unknown quantity and our judgements have to be more intuitive now'. While some members undoubtedly took the opportunity to let their membership lapse, the unions continue to be organised into branches and although there is 'a grey area' they retain some idea of the strength of their base. While this is more difficult for the AEU who are organised on the basis of geographical branches, MSF operate a closed branch where every branch member works for GEC in Edinburgh. The closed branch system also partly helps to overcome the divisionalisation of the workforce. Although the unions seem to be pushing for standing orders as the replacement method for check-off, where union reps need to collect subscriptions in their sections on a regular basis, involving direct, face-to-face contact with union members, paradoxically, the abolition of the check-off may strengthen levels of commitment to union organisation.

Restructuring the workplace

Why was the restructuring relatively peaceful?

Explanations for the relatively peaceful nature of the restructuring differ widely. Trade union inability to effectively challenge the restructuring process was put down to a number of

contradictory reasons. In one account, from an ex-AEU convener, trade union members in Edinburgh are characteristically moderate and reluctant to take industrial action,

> The contraction has been relatively peaceful because there is a reluctance to 'take the coats off ' here. Unlike the workers in the west coast there is a specific, more cautious kind of east coast culture. It is only over the last 18 months or so, after a phase of initial quiet, that GEC have really cut it up rough. In 1992 the wage freeze was imposed and that was the start of the spiral of central interference. Since then we've had redundancies, cuts in redundancy pay, real wage cuts, divisionalisation and we've still narrowly lost the ballots to take strike action to resist them.

As we have seen, not all ballots for action were lost. In another account, from a GEC manager, the Ferranti unions had been too militant,

> It was only natural in the early stages that the unions were hostile to these lay-offs. The unions had traditionally been militant and untrusting of management.

Not surprisingly, longer-serving Ferranti managers did not find the unions especially militant. The Personnel Manager claimed that most union officials were 'reasonable' to deal with, regardless of their political convictions,

> On the whole I find the union officials to be tough but fair negotiators, regardless of their individual politics. This goes for some left wing negotiators.

However, the specialised mediation practices acquired by union conveners constantly involved in procedural routines under Ferranti tended to concentrate leadership functions in the person of the convener. When conveners left the post, particularly in the changed conditions of the GEC regime, there was little expertise to fill the leadership vacuum on the union side. At South Gyle, for example, this led to some local managers becoming hegemonic over union representatives in identifying the needs of the company as corresponding to the interests of the union representation,

> Local TU reps have yet to find their feet after divisionalisation because they relied too much on the expertise of one person, the convener, in the past. The convener would become a bit of a specialist building up knowledge and relations over the years, covering the whole of the group, and his reps would take a back seat. The local stewards are getting more focused on the business needs of the firm and some are even reluctant to take advantage of the opportunities for trade union training courses because they don't see them as particularly relevant to their patch.

The Crewe Toll factories seem to have been less affected by this than the other sites. There a residual union cadre continued to function after the 1993 strikes. This was the traditional centre for 'bringing on' younger stewards and where union and section leaders were based. Also present at Crewe Toll was a vague socialistic presence among the stewards ranging from traditional right and left wing Labour supporters through to the MSF convener who identified himself as a Marxist. The MSF convener at Crewe Toll explained the relatively pacific nature of the restructuring mainly in terms of the legacy of the workplace union organisation under Ferranti,

> There has always been that 'we're all Jock Tamson's bairns' attitude ... Generally the Personnel Officer was on very good terms with the trade union convener. A lot of ex-shop stewards became managers. There was no clear line of demarcation ... So you had a flabby shop stewards organisation which had never fought for anything, had never had to resort to militant tactics to get what were the best wages and conditions in the city ... It was a shop stewards' organisation, a trade union organisation that was built up on the basis of guaranteed big wage rises [and] guaranteed good conditions.

Although formally trade union organisation by the 1980s seemed to be secure when it was tested by GEC over issues such as redundancy, divisionalisation, wage freezes, PRP, it was exposed as being unable to alter the nature or direction of the shift. Individuals might be allocated to another job rather than be made redundant because of the union negotiator's skill but the restructuring of the workforce remained.

Part of the union's difficulties stemmed from an ideology which accepted, at least implicitly, the underlying necessity for restructuring. After all, who could oppose the logic of a world historic process, the ending of the cold war, and the opportunities of the so-called 'peace dividend'? For most left-wing stewards this seemed to have a 'progressive' character to it. It posed in an acute way the usefulness of the end product - GMav may have been a high-tech company, but high-tech for what? This is not to claim that the workforce were inherently or consciously anti-militaristic, although a small number undoubtedly were. It was well known that 'a spate of people left during the Falklands conflict and again during our time in bed with ISC, who were known to deal in cluster bombs'. The company also made strenuous efforts to conceal their involvement in the Trident programme from the workforce. When it was discovered that a navigation systems project, codenamed Draper, was in fact equipment (accelorometers) for Trident, the Ferranti management were forced to reverse their declared

policy of not doing any work for Trident. Ferranti's technologism and the technical division of labour helped to obscure a more militaristic identification with the product.

> Most people do not concern themselves with the end use of the product. The immediate technical problem is probably more of a motivating factor for our engineers.
> (Production engineer)

> We do not see ourselves as primarily military, although the end product serves a military purpose. Under Ferranti we were a centre of engineering excellence ... We are not in the *attack* business but in the *defence* of the country business. We see ourselves at the clean end of the business, having no involvement in nuclear work for instance ... Because we operate at the front end of technology people tend to view the work in a disembodied way. Few people actually see the finished article, especially where military secrecy is involved.
> (Personnel manager)

Diversification campaigns apart, even the left-leaning MSF shop stewards committee had no answer to the business 'realism' of management in 'adjusting' the workforce to levels that the market would tolerate. As one manager put it,

> The reason that the recent changes have been relatively peaceful is that the unions recognise that we were well over-capacity and that the work is not there to sustain past employment levels.

Besides the changed market conditions, there was also the way that the external political and legal environment seemed to have tilted decisively against trade unions by the early 1990s.

> The other factor making the unions more co-operative is that they were devastated during the 1980s through changes in the law. They are now more likely to consider the effects of their actions on the company and their union's purses more carefully than at any time previously.

Bereft of their wage bargaining function the unions may be down but it is too early to count them out. It would be an exaggeration to suggest that the unions have been reduced to a cowed and demoralised rump organisation. The trade unions continue to have a loyal, if passive, membership base, continue to be recognised, still have time and facilities to conduct the business of representing the workforce and, most importantly, have a layer of committed activists who have basically held union organisation together in trying circumstances. The divisions meet formally once a month and the unions in the Edinburgh group meet every three

months. In this the unions merely reflect the continuing centralisation of the Edinburgh personnel management system who meet once a month to decide policy, or more regularly if the situation demands it. Although badly damaged by the 1993 settlement, the trade unions continue to function and as restructuring continues to store up worker grievances which have fewer channels of legitimate expression, the possibility of trade union revival cannot be discounted. In the absence of such a revival, workers will become increasingly recalcitrant, workplace participation will be undertaken grudgingly and resistance will take 'illegitimate' forms over which the company will have little forewarning and exercise even less control. Any hardening of dumb resentment among the workforce will act as a further brake on initiative, involvement and flexibility in the labour process. These are precisely the specialised characteristics which make highly-qualified labour so important to high tech development processes and which figure so largely in the company's public utterances.

Reasons for the contraction

In Scotland, GEC were widely castigated for the scale of the job contraction in Edinburgh. Alistair Darling, Labour MP, for example, attributed the 350 job losses to 'an inevitable result of the take-over by GEC' (*Evening News* 2 February 1991). When the next tranche of 800 redundancies were announced Darling shifted the blame to the government for two key contracts not being awarded to British companies. These were when the MOD made the US company, IBM, prime contractor for the Royal Navy's new anti-submarine helicopter, EH101 Merlin. Darling said, 'What makes me really angry is that the Government awarded the Merlin helicopter contract to the Americans, despite all of the warnings which our own defence industry and my own Party gave at the time' (*Evening News* 14 September 1991). However, Darling's nationalist anger was misplaced. GEC Ferranti already had the radar development contract for Merlin and had just been awarded the production contract and were hopeful of getting long term support work for the life of the helicopter, expected to last for 20 to 30 years (*Evening News* 22 July 1991; *Scotsman* 12 September 1991).

Within the company different stresses were put on the main reasons for the contraction. Neither GEC nor the government were held directly responsible for the need for redundancies by managers, trade unions or workers I spoke to. The most common response was that GEC were responding to the reduction in defence spending, leading to declining orders. In 1991, for example the AEU claimed that the loss of 1500 jobs, from 6700 workers to 5250, since 1989 was due to two main reasons: first, a decline in orders, and second, rationalisation after GEC's

operational review (*Scotsman* 2 February 1991). While the first could be accepted as necessary because it was beyond the company's control, the second suggested some culpability on GEC's part, who were putting local management under pressure to reduce costs. Even here however GEC were not primarily held to blame. GEC managers and even Ferranti people invariably blamed the scale of the contraction on labour hoarding and underemployment under the old Ferranti regime.

> Because of the excess capacity which was stored up under Ferranti, GEC inevitably got blamed for the lay-offs that had to eventually come. (GEC manager)

> The main reasons are the excess capacity accumulated over the last ten years and the changing nature of technology so that machines replace people. (Ferranti trade unionist)

> The massive expansion of the 1980s had made Ferranti International too fat. This was compounded with the ending of the big defence contracts like Tornado. The problem for us with fixed price development contracts was how do you accurately cost ideas in the development and design engineer's heads? So far there have been eight waves of redundancies. The first two were before GEC took over. So there was already a recognition that we had surplus labour. (Ferranti manager)

The changing character of procurement and technology were therefore also part of the wider constellation that compelled GEC to squeeze costs ever tighter. One example of this was the failure of Ferranti to get the order for the navigation system FIN1155 for the Challenger 2 tank order, with the US GPS system preferred. In a letter to Lord James Douglas-Hamilton, Scottish Office Minister, Alan Clark, the Procurement Minister, said 'Experience in the Gulf conflict showed that equipment as sophisticated as the GEC Ferranti FIN1155 would exceed our essential technological needs, and could not be justified on cost grounds' and finished by reminding the trade unions of the changed balance of forces in the industry, 'I recognise that this will be disappointing news for the workforce at GEC Ferranti ... The management of GEC Ferranti are aware of the decision not to proceed [and] in the circumstances I see no point in my meeting representatives of MSF' (in *Evening News* 24 August 1991). While GEC managers said they had not yet been officially informed the trade unions argued that the decision could not be justified on cost grounds and ran counter to previous assurances that British troops would be provided with the best available equipment. This left the trade unions arguing from an old technological-fix position in support of Britain's Imperial role, while at the same time demanding government action on diversification. Yet the politics and economics

of procurement and occasionally of technology policy, such as it existed, militated against a simple 'technology in command' approach.

Edinburgh: disadvantaged by place?

As a large diversified conglomerate, it is clear from even a cursory glance at patterns of GEC restructuring that they have little in the way of sentimental attachment to particular places. The care and skill Ferranti invested in developing institutional links and constructing a strong Scottish identity would therefore seem to be at odds with the GEC style. However, as we have already noted GEC take considerable care in cultivating ministers, politicians and departmental officials at the level of the nation-state. Something similar might have been expected at the Scottish sub-state level and among Scottish MPs. Where this has happened it has largely been to placate and reassure that GEC will continue development and production of 'leading edge' electronics in Edinburgh. Thus after a round of redundancies in 1991, Weinstock met with a group of Scottish Labour MPs. The MP's were reportedly 'delighted' with the meeting (*Evening News* 2 May 1991). Gavin Strang, who was close to the previous Ferranti regime, concurred, adding that Weinstock was hopeful that there should be no need for any further rounds of redundancies on the scale which had taken place last year. Indeed, Weinstock indicated that Ferranti's performance had been better than expected and paid particular tribute to the high quality management and workforce in Edinburgh (*Scotsman* 2 May 1991). Again in 1993, Labour MPs met with the Chief Executive of GEC-Marconi, Derek Dickinson, on the commitment of GEC to Edinburgh after the reorganisation. Strang said, 'We were pleased with his comments about employment and the firm's commitment to the city. We came away heartened and fairly encouraged' (*Evening News* 21 May 1993).

After nine waves of redundancy in five years, Ferranti workers had good reason to be less pleased with the commitments given by GEC. Instead, for some workers the possible relocation of operations south hangs over Edinburgh,

> GEC are not interested in the national dimension except where it means cash. Their managers would rather be back in the 'golden triangle' in the south of England. There is a bit of a fear that either capacity will drain away southwards or GEC will use the national question as an excuse to shift the operations lock, stock and barrel. When massive new capacity was added at Milton Keynes rumours started up here that it was being designated for the production of radar for EFA. These may be groundless but it is an indication that people feel embattled.
> (Production engineer)

Some managers see in GEC's overriding concern with economy that ECR-90 will act as a guarantee for Edinburgh

> The suspicion that the new facilities built by GEC at Milton Keynes is for a possible transfer of the EFA radar production doesn't hold water. In all its dealings GEC makes cost-efficiency decisive in allocating costs. It is therefore extremely doubtful if EFA will move to Milton Keynes because of the cost burden of setting up production from scratch when it makes far more economic sense to bed production into the site where it was developed in the first place. EFA will guarantee the radar divisions.
> (Chief Production engineer)

With the declining influence of the 'Scottish Mafia' at the state level, GEC no longer need to be as centrally involved as Ferranti were. In any case some sections of the erstwhile Mafia, like Strang, became increasingly hostile to GEC. As a long-serving Ferranti manager noted,

> There seems to be a distinct lack of desire by the Scottish Mafia to act as it did in the past. People like Gavin Strang and the local MP Lord James Douglas Hamilton blame GEC for the contraction in employment. Anyway the Scottish Mafia is less relevant now, since GEC do not understand them and care even less about them.

Where participating in the institutional structures in Scotland was almost akin to a civic responsibility for Ferranti managers, GEC managers stress its voluntary, individual nature.

> ... we make a positive contribution to the local economy and Scottish society through voluntarily doing good work with Lothian and Edinburgh councils, Scottish Enterprise and various bodies like that.

> In terms of the role GEC Marconi people play in local business and public organisations, then again there is no company directive on participating. It is left up to individuals to judge the kind of contributions that they can make. The individuals at Marconi are motivated and experienced enough to work this out for themselves. Perhaps one of the biggest factors is that participation is part of the identity of what being Scottish means - you get on with it and you make your contribution.

Some managers who arrived in Edinburgh from GEC's English plants noticed a greater willingness on the part of MPs, officials and ministers in Scotland to play an active role in supporting GEC locally,

> We really need more active government, getting involved in helping firms to learn about marketing to their best advantage, backing investments and clearing political obstacles out

> of the way of businesses. We are better placed in Scotland in terms of institutional support than elsewhere in the UK. It is much easier to get people to the Display plants in Edinburgh than it is for the same plant in Rochester down south.

There continued to be an unresolved tension between Edinburgh and Rochester in Kent, where the headquarters for GMav was based. For one shop steward it seemed as if Edinburgh became 'GEC's 'new colony' but that they hadn't yet wanted to 'go native', the implication being that GEC did not want to adapt to the seemingly distinctive practices and attitudes that operating in Scottish locations entailed.[3] Instead the Edinburgh operations were expected to adapt to the GEC approach to business practices and corporate identities.

> It seems a harder culture and more unionised which some English people don't quite know how to handle. Now however we must integrate into the GEC culture, regardless of local cultural differences.

[3] In part the setting up of GEC (Scotland) after an industrial dispute at Yarrow in 1993 by Bob Easton, Murray Easton, Ron Dunn, and Gavin Laird was an attempt to meet the demands of the 'Scottish dimension'. Basically it functions in the same manner as a quango playing an important political and promotion role, lobbying in Scotland and England on behalf of GEC. Although the composition of the board has since changed GEC (Scotland) remains a creature of GEC and retains little of the explicit national identity that the Scottish Group of Ferranti created over four decades of being at the centre of institutional relations in Scotland.

PART THREE

THEORETICAL DIMENSIONS OF RESTRUCTURING

The sources flow to one's hearts content, and there they converge to form the stream of tradition; this stream flows along as far as the eye can reach between well laid-out slopes. Historical materialism is not diverted by this spectacle. It does not seek the reflection of the clouds in this stream, but it also does not turn away from the stream to drink 'from the source' and pursue the 'matter itself' behind men's backs. Whose mills does this stream activate? Who is utilizing its power? Who damned it? These are the questions which historical materialism asks, and it changes the picture of the landscape by naming the forces which have been operative in it.

Walter Benjamin, *Charles Baudelaire*

Chapter 11

Dimensions of restructuring 1:
Public and private

Analytical pre-occupations

This study has examined historical continuities and discontinuities involving two key arms producers in Scotland. From the case studies it has been established that such firms cannot be understood empirically as atomised 'things-in-themselves'. In this final part, it will be argued that even less can they be understood theoretically as isolated capitals. If empirically the historical development of such capitals has been thickly layered no less can theory attempt to reconstruct the many-sided determinants of restructuring. It may seem obvious to begin a layered analysis of the restructuring of military industry from the world-historic events surrounding the end of the Cold War, disintegration of the Warsaw Pact and the fall of the Berlin Wall. This approach to layering would cement the separate bricks of organizations, conjunctures, events and agents, into a solid, reliable wall of 'factual' evidence. Piling the 'factual' bricks on top of each other, defence industry restructuring would be treated as a synchronized hierarchical series of responses to changed market conditions. Following global political change a circular episodic process seems to operate ad infinitum: firms react - markets compel - firms react, and so on. Here, a dominating external event, the global significance of the break-up of the Warsaw Pact, causes changed national defence procurement priorities, which in turn causes the restructuring of the social relations of production at all levels of national systems of arms production, with unavoidable consequences for the internal relations of the individual capitals that compose it. In this perspective, organizational change is functional and uni-directional, leading automatically from the global to the local. As global demand contracts and competition intensifies it is supposed that external necessity imposes upon firms a uniform internal structure better suited to the shifting environment.

Indeed, the analysis developed here retains the notion of silent (and noisy) compulsion acting on firms. Yet a simple formulation of blind 'market' pressures and firm responses is hardly sufficient. A checklist ticking-off parallel market changes and organizational shifts tells us little about the inter-relationships *between* the state 'market' and military firms and still less

about internal divisions and processes *within* such firms, between labour and managers or even within management or labour. Certainly, incidents, events and conjunctures indelibly mark the process of structural change all the way down from the world-historic end to the bureaucratic regimes of the Warsaw Pact to the struggles for control of time and space on the shopfloors at Rosyth and Ferranti. Such an approach would seem to have the merit of connecting in a concrete way local to global processes. Yet to begin an analysis from discrete conjunctures and work back to individual capitals would be to assume precisely that which needs to be explained. Instead of treating concrete social forms as a process combining many determinants a unilinear process of causality would already be presumed. Such a procedure would run the risk of presenting a 'chaotic conception of the whole' arising from a misplaced concreteness of the two particular firms under discussion. If the defence market is a special case of capitalist production and accumulation, which I want argue it is, then a sense of the dialectics of restructuring, of the objective and subjective conditions internal to the restructuring process, needs to be rendered.

A major theme of the case study chapters was historical continuity and change. Mainly this took the form of reportage without making underlying theoretical assumptions explicit. The aim of the final three chapters is to elaborate a substantive theory of restructuring. This is not without some obvious pitfalls. On the one side, empiricism lurks and, on the other, formalism. A substantive theory of restructuring need not be taken to imply a 'straightforward' reading-off of restructuring directly from the case studies. It is not a question of identifying some universal, undifferentiated linear process of causation nor of isolating generalisable statistical variables and regularities. In a certain sense, each and every social change is unique in that it will never be replicated exactly as it happened. But, in a more profound sense, each case of restructuring renders something of much wider processes in concentrated form. Form and content may be separable analytically but concretely they are always indissoluble. Case studies cannot, in other words, be treated as isolated, self-contained fields of study nor as the mere epiphenomenal expression of a deeper, real content.

Instead, here the case study approach can act like a prism through which, at various degrees of analysis, the light of structural change is refracted to reveal the many-sided complexity of restructuring. As Elger (1990: 85) notes, 'case studies offer unrivaled insight into the processes and trajectories of restructuring and, while they do not lend themselves to straightforward generalization, they can throw particular light upon pioneering, but as yet

unusual, innovations'. While case studies may be interesting in their own right for studying pioneering or unusual innovations they can also generate deeper insights into the shift from a relatively settled patterning of social relations and institutions to the more agitated state of structural change, perhaps coming to rest with the creation of a new patterning. An alternative reading, however, is that the relative stability and predictability over three decades of the permanent arms economy has already become a novel historical fact and contemporary restructuring marks a return to constant uneven structural change and upheaval to meet short-run exigencies in the state mediation of local-national-global tensions. Structural change is not therefore a shift from some fixed point to some new static structural condition

Beneath the seeming solidity of the structures of the permanent arms economy lay a complex totality of social relations. At least one significant cause of global restructuring was the use of the arms race by competing military blocs to break and subordinate rival economies through ever escalating the cost of military preparedness (Kidron, 1967; Harman, 1984). The production and reproduction of structure in the arms industry was not then a singular effect of the Cold War raging outside its boundaries. In other words, structure cannot be simply counterposed to social processes and relations. It is in the nature of the restructuring process that agents, within definite limits, initiate structural change and that the terms of such change are subject to contestation and negotiation. In the case of the arms industry, restructuring attempts to reorder two sets of relations in particular: first, state/capital relations and, second, capital/labour relations. Both were to become subject to the semblance of various 'market' mechanisms which attempted to place money in command through private property rights, commodification and management prerogatives. I say 'semblance' because the process of marketisation was conditioned by two forms of politics, a politics of state and a politics of production, which prevented 'normal' ideal market relations from functioning. The two forms of politics are not conceived here as external and only contingently related but as dialectical moments of the same process through which exploitation, the appropriation of unpaid or surplus labour, takes place.

In chapter 1 it was argued that restructuring represents attempts in varied forms to arrest or at least alter the terms of crisis. In the absence of a systemic solution, restructuring was premised upon the possibility of resolving organizational contradictions. Restructuring, understood as a broad process, connects up the general and the particular across a strategic temporal and spatial intersection. This study of structural change affecting two firms in a distinctive sector

concerned change of a modest kind. At Rosyth and Ferranti a problem of organization ran through state-capital-labour relations in an acute way. In order to grasp the special problem of organization it was necessary to historicise the concrete organizational forms taken over time by the two cases examined. This was done by outlining the historical accretion of political obstacles to organizational reform. The range of barriers included state-sectoral, corporate, management, labour and work organization, which, when combined, inhibited thoroughgoing restructuring. The context of this was the seeming permanence of the Cold War arms economy. Incremental decisions affecting Rosyth and Ferranti to expand employment, fixed capital and productive activities were taken pragmatically, based on a rational assessment of foreseeable risks.

Even when organizational crises made themselves felt at certain moments, for example at points of armament demand contraction, project cancellations, officially-sponsored studies or heavy financial losses, founding organizational structures, ideologies and cultures persisted. Since the state viewed Rosyth and Ferranti as 'strategic' to its need for accumulating armaments it took a decisive interest in preserving them. In other words, no external, disinterested method of market sanction operated to impose restructuring. In the absence of this, from the late 1950s until the early 1970s a kind of organizational equipoise settled over firms like Ferranti and Rosyth. Restructuring, when it came, would be 'extra-economic', a negotiated outcome of willful political decision-making. However, the two key points here are, first, that the self-imposed limits to the restructuring process inhibited a resolution of the structural contradictions which gave rise to it and, secondly, that each 'solution' advanced at various levels contained within it its own contradictions (Gough, 1992).

At the risk of merely restating well known ground I want therefore to present a case for locating workplace restructuring within a wider political economy of restructuring. In doing so I want to correct for the recent trend which takes the industrial restructuring of the past three decades as something which happens *to* labour. Here restructuring appears as an irresistible, immanent force outside of human action. This has had the lamentable consequence of clearing the process of industrial change of active agents, as with 'capital-logic' versions of the globalization and regulation schools or, at best, of adopting a managerial imperative as the sole locus of agency. In the case of top-down studies the contradictory dynamic of management and labour under capitalism vanishes behind historically and socially barren structural forms. This will be made evident in the critique below of a Human Resource

Management approach, which accepts managerial self-images of labour as a largely docile mass to be enrolled behind a phony rhetoric of participation, partnership and profits. By chance just such an account has been given for one of the case studies examined here, Rosyth dockyard, in a series of papers covering the commercial management period (Gennard and Kelly, 1991; 1992; Kelly and Gennard, 1996). A radically different interpretation will be offered of changing workplace relations.

In presenting a political economy of arms production account needs to be taken of relations between the state and capital. In contrast to atomistic approaches which close-off the separate 'logics' of state and capital, here capitalism will be argued to exercise a totalising presence which presses down on the state's ability competitively to accumulate armaments on a national basis. A crucial, but neglected, aspect of the 'privatisation' of state activity is to restore private sovereignty over the relations of production and to redefine public power as a narrow field for ideological and political struggle. After briefly discussing radical sociologists on state and society, an alternative approach, based on the Marxist theory of state capitalism, will be outlined to account for shifts in the public and private forms of ownership of arms production. Here individual capitals will be located within a national industrial complex, within which 'strategic' sectors and firms were, and are, maintained by the 'techno-national' demands of the state for advanced weapons equipment. The process of technical-organizational restructuring of the industrial complex on the basis of 'the market' is thus highly contradictory since public power continues to be exercised at all levels to protect strategic capitals (and electoral advantage).

Restructuring the public and private

Local restructuring cannot be presented then as some transparent, unmediated expression of the decay of bipolar global rivalries. Yet one thing seems to universally characterise contemporary restructuring: a shift from 'public' forms of control and ownership to some variant of the 'private'. 'Privatization' became a global leitmotif of the 1980s and 1990s, from Thatcherism in the west through to *perestroika* and market socialism in the east. However, an exclusive focus on the public and private dimensions of restructuring through detailed accounts of the transfer of state to private ownership will fail to penetrate the secret purpose of privatisation. To treat 'the ensemble of social relations' simply as a chronicle of discrete situations or to reify and divide categories into separable public and private spheres, sanctions a lapse into empiricism, on the one side, and an arid formalism, on the other.

The eventual form restructuring took could not be indifferen to the different ownership patterns of the two firms. In the Ferranti case, movement oscillated between private family ownership, to public control after financial failure, and back again, with the government sale of its stakeholding. Rosyth, under state control from the start, moved initially to the half-way house compromise of commercial management due to the political calculations of officials and government ministers and only belatedly to complete private ownership ten years later. Yet, despite stamping the change process with peculiarities, juridical relations of ownership can only be considered of secondary importance. The significance of the public/private distinction rests more in what it means for the particular form in which surplus labour gets extracted, or not, in the accumulation of armaments by the state than its meaning for legal or juridical property rights *per se*.

In making this judgment about the relative significance of ownership the usual way of applying public/private distinctions becomes inadequate in accounting for the restructuring of state activity of the past two decades through processes of privatization and marketisation. Naturally, in a study focusing on specific examples of restructuring, a lengthy historical excursus on the relationship between state and society is precluded. Some preliminary discussion is required, however, to map out how restructuring dissolves like acid boundaries between public and private. In order to illustrate how the account offered here differs from conventional approaches, I want to consider some of the implications of these for the public/private segregation in understanding 'anomalous' firms like Ferranti and Rosyth.

Much recent historical sociology and social theory separates out the economy as a private sphere of capitalist accumulation from the state (and military) as analytically autonomous public spheres (cf., Giddens, 1985; Mann, 1987; Skocpol, 1979; Hobson, 1997). Marxism, in particular, is found to be lacking the theoretical means to account for the essentially public spheres of the polity or militarism as developing independently, at least in principle, from the laws of motion of an essentially 'private' capitalism. Skocpol (1979: 27), for instance, claims that Marxism neglects the autonomous structures of the state, 'a structure with a logic and interests of its own not necessarily equivalent to, or fused with, the interests of the dominant class in society or the full set of member groups in the polity'. A categorical imperative thus exists to split *a priori* an external, public state sphere of politics from an internal, private civil

society sphere. As an external, hermetically-sealed phenomenon 'the state' is re-connected back to society only contiguously.

Here I will merely touch briefly on two aspects of atomised dualities in Giddens (1985): the separation of state and capitalism and the theory of structuration. Giddens identifies three distinct organizational forms or institutional 'clusters', industrialism, capitalism and the state form itself. As societies become 'stretched' over time and space, 'time-space distanciation', face-to-face contact, 'high presence-availability', becomes progressively lost. Two ways of re-integrating agents become necessary: societal integration at the level of individuals, system integration at the level of wider communities and collectivities. This is couched in terms of authoritative and allocative resources. Authoritative resources roughly correspond to the state form, defined by those resources which are a means to dominion over human beings: military, surveillance, administration and ideological powers. Allocative resources, technology, raw materials, instruments of labour and end goods, roughly correspond to the 'economic' form, industrial capitalism, in which power is bound-up with the productive transformation of nature into useful objects. Authoritative resources exercise primacy over allocative resources in the rise of modernity; indeed, military technology is given primacy over production technologies (1985: 255). As the economy and the polity become increasingly insulated from each other, internally the state 'pacifies' society through 'surveillance' technologies and externally prepares armament technologies for inter-state violence.

The social/polity, economy/state duality is thus established on the basis of using different types of media. Giddens' atomistic approach to the public and private rests on a utilitarian theory of action where structural resources become the media through which knowing agents instrumentally pursue ends. Knowledgeable agents utilize resources as something external to their being in the same way, perhaps, that capital employs labour and labour consumes the instruments of labour. Agents are constantly called upon to work with externally available resource media, allocative or authoritative, to either reproduce or change structures. Giddens' formalism avoids setting out concrete conditions for preferring structural change to reproduction, the forms of media use needed, and flattens-out 'the different modalities of resistance in different social formations' (Callinicos, 1989: 117).

In the end, the result is a re-emphasis on agency over structure (Wright, 1983; Callinicos, 1985). What is lost here is that the collective capacities of agents are structured above all by

their position within the social relations of production. The inadequacies of 'structuration' theory for dealing with substantive areas of restructuring rest in seeing structural change and reproduction as unspecified choices founded upon observable processes where agents select appropriate media to fashion structures. Agents cannot have an external relationship to relations of production which they can knowingly choose to enter or exit to access resource media.[1] Here it is sufficient to note Giddens' institutional clustering of state and capitalism as distinct entities premised upon access, command and exercise of scarce authoritative and allocative resources as forming an inadequate basis with which to grasp the modalities of restructuring of public and private in the arms industry. Rather, the internal structure of capitalist social forms are the necessary, objective but insufficient condition upon which organizational capacities, including the state form, are created, maintained or lost.

Within Marxism a similar dualism between state and capital has developed, primarily between functionalist and instrumental approaches (Held, 1983). Milliband (1983:65), for example, in seeking to avoid 'class reductionism' draws up 'an accurate and realistic 'model' of the relationship between the dominant class in advanced capitalist societies and the state [based on] *partnership between two different, separate forces* ...' Kaldor (1982) stretches an analogy with modes of production to indicate separate 'modes of warfare' with corresponding 'means' and 'relations' of warfare. Shaw (1991; 1994), who has been discussing the problem of the state and the military in Marxist theory since the early 1970s, has moved from a functional 'class reductionist' view of the state to an autonomist view, where the state and the military possess their own discrete logic. Giddens' pacific internal society/violent external state-system presents for Shaw (1991:18) 'an extremely useful thesis, which expresses both the tension between and the combination of the logics of capitalism, industrialism and warfare'.[2]

Nevertheless, the distinction between socio-economic and geo-political logics remains. For Shaw (1985: 253), 'never more vividly than in modern times, is that however much states need

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[1] The agency-structure discourse, and derivatives like structure/strategy in organisation theory, in positing social reality in dualist terms is not simply a convenient academic myth. Instead, it can be understood as a one-sided, naturalisation of actual fetishistic social relations under capitalism. As noxious emissions from the decomposing organic matter of commodified social life it is not wrong. It simply repeats in ideas the antinomic split where it exists as 'a definite social relation between men [ie agency, subjectivity], which assumes here, for them, the fantastic form of a relation between things [ie, structure, objectivity]' Marx (1976: 165).

[2] Although Shaw qualifies the precise form of their interaction when civilians are mass mobilised for warfare and wars create pre-conditions for socio-economic revolution.

economic resources to set them in motion, once this has happened *the logic of competitive violence is stronger than any economic logic*' (emphasis added). By the early 1990s this is reversed. Shaw locates a private sphere of 'civil society' uncritically in Gramsci's formal distinction as lying somewhere 'between the economic structure and the state with its legislation and coercion' (quoted by Shaw, 1994: 647). As 'a defining characteristic' of the end of the twentieth century, 'post-militarism' results from the 'logic' of high technology war preparation in reducing the demands the state makes on society and, as individuals and groups develop spaces and interests free from the nation-state, militarism is consigned to a nostalgic 'armament' element in popular culture (Shaw, 1991: 184-190). 'Society has developed beyond the military and militarism as they have been understood in most of the twentieth century' (1991:viii). On the back of technological advance warmaking nation-states silently tiptoe away from imposing themselves upon essentially pacific domestic civil society. A presumed dependency of the economy and culture on state power has now been reversed. Society thus becomes less militarized because of the increasing independence of economy and culture from the demands of the nation-state. Militarism, assumed as an alien imposition of the public onto the private, withers as a social power as civil society asserts its own indubitable technical logic.

Where then does military industry sit within the rigid bifurcation of the public and private into distinct and, at best, externally-related logics of capital and state? In conventional accounts, as chapter 1 showed, military industry is ascribed mutant status, contorting the neat public/private separation into a deformed social form. Mesmerized by the self-images of the Cold War, the arms industry in liberal democracies appeared as a hydra-headed monster encroaching illegitimately on democratic politics on the one hand and the free market on the other. Because of the close integration of their peak organizations into the state, arms producers could not be considered 'private'; this despite a dependence on wage labour and the wider circulation of commodities in the economy, and state appropriation of surpluses. But, as legally private firms, nor were they considered 'public' despite being called into existence by state demands for armament technologies. Therefore military industry must take some other autonomous form.

Although such perspectives claim they are 'modeling' the observable behaviours of institutions and agents, in fact real historical processes of concrete human beings constitutive of and constituted by determinate circumstances are eschewed in favour of reified categories: state,

economy and 'civil society'. The effect is to empty the private of the political 'moment of coercion' and the public of the economic 'moment of appropriation'. Without troubling the formal public/private separation the way is cleared for mystifying substantive changes to social relations, processes and structures. Conventional notions of the arms industry as a surplus-devouring, parasitic social formation thus neatly express in ideas existing alienated social forms.

State capitalism: transcending the public/private divide

By counterposing the public to the private in this way the specifically capitalist nature of military industry is occluded. Shaw's argument about 'post-military' society is, of course, part of a general celebration of what Wood (1995) calls 'the cult of civil society' to be found in 'post-modernism', 'post-Marxism', 'post-Fordism', 'post-industrialism', and so on. The concept of civil society rests on two related dichotomies: one, state-civil society, where civil society includes all social relations outside the state; two, more narrowly, civil society includes relations and institutions outside the state and the capitalist economy. The former is more commonly employed to set-up the public/private distinction. Here the standard opposition is established between vertical state violence, coercion and hierarchy and horizontal civil society pluralism, autonomy and freedom. Yet the coercive logic of accumulation and the subordination of wage labour is located precisely in the private sphere, where effective possession of the means of production 'privatises' public power in the command structure of capital (Wood, 1995:36-44) creating an internal 'politics of production'. The coercive imperative to accumulate and internal relations of domination are thus integral to the private sphere, although obscured by the seemingly separate public power of the 'politics of state'.

Capital and state do not merely interpenetrate externally as independent objects or levels. It is the nature of the public/private split itself within which the capitalist arms industry must be understood. This involves taking four steps. At the most general level, states in class-divided societies reflect the relationship between the organization of labour and political domination. *Combined* these determine the specific form in which surplus is extracted from the direct producers (Burnham, 1990, 1995).[3] Second, where social power within capitalist productive

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[3] As Marx (1967: 791) famously put it,

> The specific economic form, in which unpaid surplus-labour is pumped out of direct producers, determines the relationship of rulers and ruled, as it grows directly out of production itself and, in

relations takes the unique form of an impersonal external necessity acting on legal equals, and not fundamentally on personalised political coercion, only then does the sovereign character of public state power over civil society emerge. Physical compulsion is replaced by an association of formally free producers who have an urgent need to access the means of production and reproduction through the successful sale of labour power in the marketplace. The commodification of labour power results for the first time in a subordination of the direct producers without recourse to an extra-economic threat of direct force. Labour is therefore both free and dependent; free from public compulsion, dependent upon private association. 'Politics' and coercion are expelled from private associations based upon market contracts between legal equals, 'in a society of equivalents relating to each other through contract, politics is abstracted out of the relations of production and order becomes the task of a specialised body - the state' (Kay and Mott, 1982: 83, quoted by Burnham, 1995: 101). The 'secret origin' of the internal authority of independent states, what Rosenberg (1994) calls the 'empire of civil society', is thus located within the evacuation of 'politics' from the 'private economics' of capitalist social relations of production with the rise of wage labour.[4] Within the private realm of the organization of production the labour process is inseparable from the internal 'political' management of the antagonistic relations of production (Wood, 1995: 45)

Third, the specific form national states take as territorially-bounded units of jurisdiction is contradicted by the global basis of accumulation. As such, states compete and collaborate to

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> turn, reacts upon it as a determining element. Upon this, however, is founded the entire formation of the economic community which grows up out of the production relations themselves, thereby simultaneously its specific political form. It is always the direct relationship of the owners of the conditions of production to the direct producers - a relation always naturally corresponding to a definite stage in the development of the methods of labour and therby its social productivity - which reveals the innermost secret, the hidden basis of the entire social structure, and with it the political form of the relation of sovereignty and dependence, in short, the corresponding specific form of the state.

Lest this be misconstrued as implying functionalist support for a 'base/superstructure' approach Marx (791-2) continues,

> This does not prevent the same economic basis - the same from the standpoint of its main conditions - due to innumerable different empirical circumstances, natural environment, racial relations, external historical influences, etc., from showing infinite variation and gradations in appearance, which can be ascertained only by analysis of the empirically given circumstances.

[4] Unfortunately Rosenberg does not make the most of this insight and leaves the public/private split largely intact, although now unmasked as a reification of reality, instead of reconstructing their contradictory inner-connections. His claim for totality in overcoming the dualism of state and market is therefore less than convincing. More satisfactory is his more recent re-working of Trotsky's theory of combined and uneven development into an account of the rise of the inter-state system (Rosenberg, 1996).

mediate the national-global tension within the inter-state system to secure the most advantageous national means of accumulation. Rosenberg (1994: 143) calls attention to the 'remarkable parallels between the condition of states and the condition of firms'. Here he follows what Marx had to say in *Capital*, 'anarchy in the social division of labour and despotism in the manufacturing division of labour mutually condition each other'. Rosenberg thus argues for seeing anarchy at the level of the world state-system and the internal domestic state authority as mutually conditioning each other. Only here, it can be added, the relationship between despotism in the workplace and anarchy in the marketplace is replaced by state administration and the perils of diplomatic alliances and warfare.[5]

Four, the specific relation between the estranged social forms of public and private is contingent upon national institutional structures of state, capital and labour and the way these combine to mediate the national-global tension. In contrast to the formalism of Shaw and Giddens, Marx,[6] but more particularly Engels, noted the mutual interdependence of military

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[5] This is similar to the process which Bukharin (1972), drew attention to in 1915. Bukharin however, took the further necessary (although at that time premature) step of identifying the fusion of the state and capital at the national level into 'state capitalist trusts' which displaced anarchy from the national economy to a higher and more terrible form: imperialist competition. What Bukharin called 'complex competition' comes close to the notion of nationally-based industrial complexes developed below. See Chapter 1 above.

[6] Marx regularly drew parallels between military organisation and technology and the relations and forces of production.

> The *history of the army* brings out more clearly than anything else the correctness of our conception of the connection between the economic forces and social relations. In general the army is important for economic development. For instance, it was in the army that the ancients first developed a complete wages system ... So also the guild-system among the corporation of *fabri* [smiths]. Here too the first use of machinery on a large scale. Even the special value of metals and their use of money appears to have been originally based ... on their military significance. The division of labour *within* one branch was also first carried out in the army. The whole history of the forms of bourgeois society is very strikingly epitomised here' (Marx to Engels, 25 September 1857, in Torr, 1940: 111, n2).

But this point can also be made negatively, as Weber did, in that the necessary supply of landless labourers for the rise of industrial capitalism to take place was made possible, at least in part, by the lack of a large, peasant-based army in England and the existence of a small, highly trained and equipped professional army. See also Brewer, (1989). In *Wage Labour and Capital* Marx (1847) describes class struggle as battle of two contending armies, one of which wants to expel as many 'soldiers' from its ranks as possible. Engels, of course, was more concerned with military developments than Marx. Engels' (nd, 1878) materialist account of militarism is spelled out in *Anti-Duhring*. Against Herr Duhring's 'force theory', Engels (nd: 190) describes the direct dependency of force on 'economic' conditions and not at all on the individual genius of generals 'but the invention of better weapons and changes in the human material, the soldiers; at the very most, the part played by generals of genius is limited to adapting methods of fighting to the new weapons and combatants ...'

and 'economic' power, or authoritative and allocative resources, as reciprocally conditioning. For Engels (no date: 189-90) military power

> requires very real preliminary conditions before it can come into operation - that is to say, *instruments*, the more perfect of which vanquish the less perfect; moreover, these instruments have to be produced, which also implies that the producer of more perfect instruments of force, *vulgo* arms, vanquishes the less perfect instrument, and that, in a word, the triumph of force is based on the production of arms, and this in turn on production in general - therefore on 'economic power', on the 'economic order', on the *material* means which force has at its disposal ... Nothing is more dependent on economic pre-conditions than the army and navy. Their armaments, composition, organization, tactics and strategy depend above all on the stage reached at that time in production and communications.

By the late nineteenth century the industrialisation of warfare generalised advanced systems of production, albeit unevenly, as backward states like Russia attempted to catch up with the most recent techniques in warfare (Trebilcock, 1981: 281-4). 'From the moment warfare became a branch of large-scale industry (ironclad ships, rifled artillery, quick-firing and repeating cannons, repeating rifles, steel-covered bullets, smokeless powder, etc), large-scale industry, without which all these things cannot be made, become a political necessity ...' (Engels, 22 September 1892, in Torr, 1940: 112). Although weapon systems may be technologically more complex today, the point is that the political and industrial 'necessity' for independent national military capabilities which gives rise to autarchy and *dirigisme* in armaments production is countered by technological advances and efficiencies in the internationalization of production.

From such a high level of generality, however, the precise contours of the arms industry are difficult to discern. This can only be ascertained at different levels of empirical investigation. Firms such as Ferranti and Rosyth form part of what might be called a 'state capitalist armament complex'. The clumsy nomenclature, 'bureaucratic state capitalism', describes a stage in the development of capitalism, roughly between the late 1920s and the early 1970s, when the public and private aligned to bureaucratically regulate national systems of production.[7] At the core of this process stood military competition (Cliff, 1982; Harris, 1983;

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[7] The most extreme expression of this was the complete domination of the economy and society by the state in the USSR. However, the USSR was not exceptional. All the antagonist states in the Second World War developed warfare states which subordinated internal economic activity to supporting military activity. The important difference from World War One was that the bureaucratic organisation of state capital was maintained after fighting ceased. This was as true for western capitalism as for the fully-fledged

Harman, 1984). Bureaucratic state capitals typically form internally-differentiated national industrial complexes [8] (Harman, 1991). Military industry evolved as a more or less integrated expression of this heightened state capital identity. The state could simultaneously be the owner of capital, controller of production, manager of labour, financier of investment, as well as the sole customer for products. In this sense there was a more or less complete fusion of the state and capital. In short, the state functioned to all intents as capital (Barker, 1978b). The state capital armament complex represents a special case of the general contradiction between socialised (global) forces of production and the fragmented (national-local) units of appropriation. Before we can descend to the level of firms what needs to be established first is where and why component parts of state capital complexes (like Rosyth and Ferranti) negotiate organizational boundaries within the social division of labour.

An industrial complex can be taken to be more than simply a relatively homogeneous network of political and economic agents collaborating to maintain a special interest. This is closer to the traditional usage of the term 'military-industrial complex' (Berghan, 1981; Sen, 1986). The concept of industrial complex has been more precisely defined as an internally differentiated bargaining arena composed of six key agents: a core firm, supplying firms, dealers and distributors,[9] workers within a core firm, financiers, and governments (Ruigrok and van Tudler, 1995: 8).[10] A state capital complex then refers to social and political bargaining, collaboration and competition within a national system of production.

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bureaucratic state capitalism of the east. The state capitalist perspective is identified politically with the Socialist Workers Party in Britain. It is also important to note that state capitalism can never be a complete or finished process. It is always subject to 'forces of repulsion' where centralisation of productive activity is countered in part by the disengagement of independent capitals and states. At a global level both Germany and Japan disengaged from the Cold War arms race and concentrated on competing in the 'civilian economy', stimulated, of course, by the US rearmament for Korea and Vietnam.

8 'The market model of classical and neo-classical economics portray capitals as isolated atoms which engage in blind competition with other capitals ... [But] any productive capital grows up within the confines of a particular territory, alongside other sibling capitals ... They are mutually dependent on each other for resources, finances and markets. And they act together to shape the social and political conditions in that territory to suit their own purposes ... The groups of capitals and the state with which they are associated form a system, in which each affects the others. The specific character of each capital is influenced by its interaction with the other capitals and the state' (Harman, 1991: 18-9).

9 Because of the lack of a commercial marketing function and the central role of the state as the broker for prime contracts the question of dealers and distributors can be ignored. For arms firms with a strategic focus on exports the role of dealers and distributors is of course crucial. Subject to 'national interest' restrictions the arms trade is often clandestinely conducted but it is clear that dealers and distributors are a key part of the arms industry complex (Sampson, 1977).

10 Industrial complexes represent for Ruigrok and van Tulder (1995:7-8, 164) 'the centres of gravity in the international restructuring race'.

In the context of the British economy the arms industry forms such a highly distinctive industrial complex.[11] For some armaments *is* the UK technological-manufacturing complex or at least its dominant element.[12] However, this does not imply that it was rationally integrated or planned. Only in the late nineteenth century did private manufacturers displace state arsenals as the leading producers of armaments. After World War Two the Labour Party and trade unions saw less of a need to nationalise what were called the 'merchants of death' in the 1930s and accepted the argument for a privately-owned but fragmented industrial structure to competitively stimulate innovation in armament technologies. Thus the Labour government of 1945-51 embarked on a massive sell-off of state-owned industrial capacity (Edgerton, 1995: 183), in what was the first significant privatization programme (although almost all attention has since focused on the nationalisations of rail, coal and steel). Ownership patterns varied according to the historical development of sectors: for example, the most modern, the military aircraft sector, was largely private until 1977; naval shipbuilding became increasingly private as the southern dockyards abandoned building and concentrated on refitting.

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[11] In this Britain is not unique. As a recent comprehensive survey of the *Fortune* 100 argues, 'at least seventy-five of today's 100 leading companies [in the world] at some point in their history profited from a war' (Ruigrok and van Tulder, 1995: 220). This extends beyond traditional arms sectors such as guns, explosives, aeroplanes or vehicles to evaporated milk manufacturers (Nestle, number 23) and cigarettes (Philip Morris, number 17). Even the number 5 industrial firm in the world, Toyota, which gives its name to a new post-Fordist paradigm, 'Toyotism', for Ruigrok and van Tudler, and Nissan, number 16, were decisively rescued along with the Japanese economy by US orders during the Korean War. Ruigrok and van Tudler (1995: 221) note, 'Altogether, ... (supra) national government policies, in particular defence programmes, have been an overwhelming force in shaping the strategies and competitiveness of the world's largest firms'. The importance of the defence market on the development of the modern industrial enterprise was also noted by Alfred Chandler (1962: 384), 'Government action such as defense or countercyclical spending that directly affected the market by increasing the national income or by making the government itself a large customer has had a significant effect on the growth of the large enterprise. The changing munitions market was of far more importance, for example, to the history of the du Pont Company than anti-trust action'. It is the specific weight of defence procurement and its dependent producers in the economy which is crucial. For the UK economy, there can be little doubt by now that defence production has been at the core of indigenous manufacturing capacity, locking in second and third tier suppliers to the interests of the dominant military contractor complex (Hislop 1997). This was a process strengthened throughout the 1980s when manufacturing was weakened considerably and its effects continued to be felt throughout the 1990s as the complex re-adjusted to a new concentration and centralisation of the industry around a feeble Europeanisation strategy.

[12] EP Thompson (1982:22) went further than most when he argued 'The USA and the USSR do not *have* military-industrial complexes: they *are* such complexes ... it stamps its priorities on the society as a whole'. Clearly, Thompson subscribed to the view that military logic at the height of the second Cold War was overwhelming society. See Mike Davis (1982) and Fred Halliday (1982) for historical critiques of Thompson.

The role of the state in arms manufacture had important implications for organisational structure. After 1945 social democratic ideology combined with the techno-nationalism of successive governments to frame a kind of military corporatism. This ranged from those organizations who always were directly under centralised state control, such as dockyards and ordnance factories, to the shipbuilding and aerospace firms nationalised in the 1970s, and the declining band of privately-owned armament firms. In contrast to nationalized industries, the state made far fewer demands on military industry to behave like private commercial firms. Public ownership in the 1970s of much of the arms complex was only a brief, belated flourish for direct, centralised control (Dillon, 1977). Even this failed to reach into the immediate day-to-day affairs of equipment producers like Ferranti, except insofar as financing technological programmes allowed. As a method of preventing incremental managerial and organizational deviations state influence over the private detail control of the means of production was indirect and weak. Building on Harris's (1972) distinction between 'pluralist' and 'etatiste' forms of corporatism, Lovering (1986) argues that until the early 1970s the relationship between the state and arms firms was closer to pluralist corporatism, that is 'hands-off' state funding coupled with protection for a set of independent, decentralised capitals.

Ferranti and Rosyth were integral parts of the UK military state capital complex. At Rosyth state and capital were completely fused, at Ferranti the boundaries were much looser. When the latter became publicly-owned little was done by the state to transform its fragmented structure. Even after the Ferranti bail-out and the wider nationalisations in the 1970s of two major defence industries, aerospace and shipbuilding, little headway was made by the Labour government in introducing a modernising, rationalising type of etatiste corporatism. Instead, the arms complex continued to be highly internally differentiated by product and function (Hartley, 1996). For example, public control at Ferranti ushered in little integration of the largely self-sufficient Scottish Group into wider Ferranti structures. Individual sites, like Crewe Toll, retained powerfully independent and distinct identities. The Scottish Group, after some initial changes at the level of senior management, was left to conduct business largely as it wished. Nevertheless, the fact that the state took financial responsibility to underwrite Ferranti's existence indicates that even a state as firmly imbued with the liberal spirit of capitalism as the British state, remained deeply committed to securing Ferranti's technological capabilities. Entire divisions of privately-owned firms, like Ferranti's Scottish Group, were dependent on state funding for design and development capital, state research centres for intellectual capital, and state procurement for profitable contracts. Although formally private,

Ferranti were locked into the state complex through overlapping dependencies on the state for orders, finance, technology and labour.

Within the British dockyard structure, where centralised bureaucratic control and planned workload allocation systems existed since the nineteenth century, a greater degree of integration was possible with labour, materials and work moved, within certain political, physical and technical limits, between the yards. But as demand and technologies changed organizational structures remained moribund. For example, from the mid to late 1970s the number of major and normal refits completed at British dockyards fell from 72 to 46 but total dockyard employment fell only slightly, from 36,000 to 34,000[13] (Cmnd. 7826-II, 1980). Until the early 1980s, further rationalisation of dockyard capacity was continually deferred and the proposals for organizational restructuring on commercial lines through a trading fund shelved.

Sectoral restructuring

Instead of thinking of the firm as some hermetically-sealed unit acting with a single organizational will or logic the industrial complex approach to firm boundaries and the social division of labour can be refined further by a focus on sectors. Sectors, as relatively homogeneous groupings of firms producing or supplying inputs to similar end-products, in our cases warship refitting and advanced radar design and manufacture, are broader than product markets but more coherent than industrial complexes, themselves criss-crossed by various sectors. A firm is supplied from a range of capital and consumer goods sectors, say, turbine manufacturers supporting warship refits or a microchip manufacturer supplying components for ECR90. Firms are not then in competition with every single firm contributing towards the final product but only with other firms sharing the sector. Much depends on the complexity of the end product and just how extensive in-house manufacturing capabilities are. To say that socio-political bargaining takes place within the industrial complex is merely to identify sectors as a moment in the social division of labour.

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[13] Absolute numbers of refits, however, tell us little about the increase in their technical complexity and the greater levels of sunk costs in supporting, refurbishing and repairing nuclear-powered warships. This is reflected in the effects of the public sector pay policies of the Labour government on dockyard workers' pay. Labour costs as a percentage of total costs fell from 24 per cent to 18 per cent between 1975 and 1979, indicating dockyard labour's declining cash value compared to the rising value of constant capital (Cmnd. 7826-II, 1980).

An approach which focuses on the sectoral context of firms is John Child's 'strategic choice'[14] (Child, 1972; 1997; Smith and Child, 1987; Smith, Child and Rowlinson, 1990) around the idea of the industrial complex allows for shifting levels of analysis from the micro-dynamics of organizational change to the meso-level of industrial restructuring.[15] In contrast to functionalist approaches where environmental determinants are stressed, strategic choice perspectives also emphasise the active shaping of both internal organization structures and external environments through a dynamic political process. Child (1997) has adapted the original strategic choice framework (Child, 1972) to distinguish 'action determinism' from 'environmental determinism'. In 'action determinism' choice is already constrained by prior management ideologies, competencies, past experience, embedded organizational routines and psychological aspects of manager cognition. These internal limitations for agency are compounded by intra-organisational political processes and flawed information. External environments exist for organizations in two senses. Most fundamentally, environments impose objective conditions on organizational survival. First, 'each sector has a *structure* in the sense of a set of *objective conditions* which can create pressures for transformation in so far as a firm's viability depends upon the extent to which its behaviour is appropriate to those

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[14] This approach has been used to explain workplace change at Cadbury's, the chocolate manufacturers (Smith, Child and Rowlinson, 1990). At first glance, this seems far removed from the sectors under discussion here, military electronics and warship refitting. While there are a few overlapping aspects between the cases, especially Cadbury's Quaker-inspired paternalism and welfarism and the family-owner status of the firm, on most counts they diverge sharply. Above all, Cadbury mass manufacture for an international consumer market, while Ferranti produce small batches in a number of leading technologies and Rosyth refurbish engineeringly complex one-off warships, and both are niche players in a highly developed and protected state market. The relevance of Smith et al's approach thus has little to do with the precise character of the firm or market but with their overall focus on structure and ideology.

[15] Indeed, some striking parallels exist between the analyses developed by Child and Ruigrok and van Tudler. Both employ an idea of strategic objectives which link the internal and external organization of the firm. Both develop a sense of competing paradigms, or 'concepts of control' for Ruigrok and van Tudler, which can co-exist until one becomes hegemonic. Both stress social bargaining networks or complexes which takes proper account of the relative power and dependency of actors. The difference in levels of analysis reflect different theoretical and research priorities. Ruigrok and van Tudler find meta levels of analysis of industrial restructuring too deterministically concerned with evolutionary trajectories which play down the role of governments and shifts in the production process, macro-level analysis as overly concerned with national politics and over-general categories of production regimes, micro-level at the level of intra-organisational change neglects wider effects within an industrial complex, and, lastly, meso-analysis, although the least developed promises to put interdependence between firms within the context of the (trans)national institutional environment and of relations within firms. A meso-focus on complexes does not therefore preclude relations between firms (horizontal), within (vertical) and without. My objection to their overall approach is that in constructing a general model of dependency and control within national industrial complexes in order to understand international restructuring they show a general disdain for a case study approach. An adequate meso-theory can only be developed which goes beyond ideal-type aggregations and rises up to the level of living social agents as they encounter reality. In this sense Child

environmental conditions' (Smith et al. 1990: 310). Subjectively, however, environments are enacted, that is, firms are environmentally selective, entering, remaining in and exiting some particular environment.

A sector is thus a field of ideology and actions, a *cognitive area* of exemplary ideas and practices, of 'sectoral recipes', by which firms compare benchmark strategies and structures. Environments are not then formed solely through the social constructions of actors. Agency is always constrained externally by countervailing institutions like competitors, the state and customer organizations. The last two of these amount to much the same thing in the arms industry. Beside internal and external constraints on agency Child also draws attention to social networks created between organizations and external contacts. Boundaries between firms and environments are negotiated through collaborative and competitive relationships, giving the firm-environment complex an institutional character. What Child (1997:55) says of institutionalised boundaries has obvious resonance for the arms industry, '... organizational actors do not necessarily, or even typically, deal with an 'environment' at arm's length through the impersonal transactions of classical market analysis, but, on the contrary, often engage in relationships with external parties that are sufficiently close and long-standing as to lend a mutually pervasive character to organization and environment'.

When combined structure, cognitive area, (or the 'sectoral imagination'), and networks overcome one-sided accounts of environmental determinism, for example as in some accounts of contingency based upon Burns and Stalker's (1961) 'organic' or 'mechanistic' organizations, or, at the other extreme, unrestrained volition, as in much of the popular business literature. Looked at from the level of the firm, the relationship to the state, as purchaser, can seem like a purely external one where organization is determined by environment in a one-way process. As a senior GEC-Marconi manager put it:

> Defence companies have an unchallengable capability to 'react' to a complex specification on technical performance, timescales, reliability, ruggedness and quality by producing convincing proposals, schedules and by redirecting well-organised, highly competent technical development teams. One must recognise, however, that the Market-place, Customer Requirements and Product Definition are 'givens' in this whole military scenario' (Colston, 1991: 131).

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offers greater scope for a nuanced account which is enhanced, I think, if the notion of industrial complex is deployed instead of the vaguely voluntarist idea of network.

In this account firms 'react' to 'givens'. The relationship is, however, a more complex one of dependency and autonomy. Firms and sectors both make and are made (and unmade) by the state complex. The 'firm-in-sector' perspective helps in an understanding of organizational change at Ferranti and Rosyth by examining, first, the objective structural forces within the sector, second, how these are re-cognized by the firms and, third, the degree of collaboration and competition across the sector. Within the arms economy the objective structural feature confronting firms is the state definition of what counts at any point in time as 'strategic' industrial capability.

Strategic capitals and the industrial complex

At the heart of the military state capital complex then are firms and sectors deemed as technologically 'strategic'. State support for the technological capabilities represented by these organizations carried what Winner (1977: 259) called 'an aura of indelible pragmatic necessity'. Rosyth, with expertise in nuclear refitting, and Ferranti, with advanced electronics capabilities, were blessed by being viewed by state planners as indispensable for the UK military-technology apparatus.

It is one thing to be aware of a sector as objective structure. It is another thing to reorganize strategically to mediate sectoral structures. At both Rosyth and Ferranti repeated attempts to radically re-order organizational structures foundered. For Rosyth, numerous studies recommended reorganizing customer/producer relations, inherited civil service culture and introducing commercial practices into the dockyard. These were clear attempts to re-orient dockyard structures and cultures to what were thought to be exemplary practices and ideas of private industry outside the state warship refit sector. But even with the concept of commercial management the government pragmatically resisted a fully-fledged version of the private model for the dockyards, ensuring organizational continuity as well as change. Policy planners attempted to limit disruption caused by any future changeover of management contractors at the end of the first term contract by building in four specific areas of continuity: first, the concept of a 'labour-only' Employing Company would provide employment continuity between different management contractors (DPT, 1986b: 4/3); second, the pension fund would be administered by an independent Board of Trustees; third, the government would retain ownership of the assets; and fourth, the government would monitor strategic capacity

and sub-contracting and would retain a golden share in the company with special powers of re-acquisition (MOD, 1986. para 22). Thus structured the sector could undergo the radical change from public to private control, from non-profit-making to profit-making, from non-comparative measures of performance to quantifiable indicators, while preserving intact ultimate state ownership, work organization and the existing division of labour.

But a problem persisted of defining precisely what a 'strategic dockyard' or a 'strategic electronics firm' might actually consist. So although the planners of commercial management made retention of strategic dockyard capacity a 'primary responsibility' of the customer organization, in DGSR's terms of reference explicit definition of what counted as 'strategic' in terms of labour or capital was not found to be 'practicable or of any value ... at any time' (DPTa, 5 September 1986). DGSR thus had responsibility for the continuity of something which could not be defined. Instead a 'flexible approach' to strategic capacity was preferred, with the notion of 'strategic' subject to alteration and modification as wider technological, political and economic shifts occurred. What this spells out is that previous rounds of investment cannot simply be torn-up to stimulate organizational change. As the Defence Secretary noted of nuclear submarine refitting at Rosyth, 'Rosyth has recently begun twin-stream refitting and this is planned to continue so that the best use is made of the expensive nuclear refitting resources all the way through to and into the Trident programme' (MOD, 1986: para: 53)

The flexible approach to strategic capacity was also evident at Ferranti. Public control in the 1970s ended the family ownership and control pattern. Yet, the dominance of the technology-chase paradigm and capital-widening strategy of firm development remained as firmly embedded in Ferranti ideology as ever, even after privatization exposed the firm to the risk of a predatory takeover. Ferranti remained a multi-divisional firm with constituent parts like the Scottish Group enjoying considerable strategic and operational autonomy from the centre. Objective conditions within defence electronics sectors, however, showed a strong trend towards centralisation and concentration by a process of merging, collaborating or being taken over by a still more powerful rival, usually GEC. It therefore made sense for Ferranti to seek protection from this threat to autonomy and to re-shape the sector from behind the shield of what was perceived as ISC's complimentary, but ultimately fictitious, sectoral recipe of global reach. Although the restructuring of defence electronics was understood more or less adequately Ferranti failed to re-cognize the sector strategically and, in a desperate gambit to

avoid the clammy grip of GEC, became the willing dupe of an ISC constructed fiction of heightened sectoral power. Ferranti's *de jure* sovereignty with ISC only delayed temporarily recognition of the *de facto* sectoral power of GEC's greater autonomy. Like the continuities at Rosyth, Ferranti's fate, post-ISC, was similarly bound up with the idea of strategic capacity, this time of state access to leading-edge electronic technology. Again, the defence electronics sector was structured above all by government action and the ideology of strategic techno-nationalism. In this case the British government orchestrated trans-national collaboration around the Eurofighter project, patronized firms like Ferranti as nationally-based technology leaders in the project, rescued both the project and Ferranti from oblivion by initially underwriting financial risk before passing the liability on to the suitor, GEC, which the government had arranged as its core national-strategic firm to take-over Ferranti.

As a medium-sized, multi-divisional firm within the UK aerospace-electronics nexus, Ferranti was undoubtedly favoured by technocratic militarism. Ferranti's privileged status as a strategic firm within an internally differentiated armaments complex was further made clear by the crisis brought about by the ISC fiasco and the different treatments of firms on the margins of the complex with the 'arms-to-Iraq' affair of the early 1990s. As marginal 'non-strategic' firms on the outer rim of the armaments complex, Matrix Churchill, Ordtec, Astra, Euromac and Atlantic Commercial, were prosecuted for supplying Iraq with military-related capabilities. What James (1993: 133-4) calls the defence establishment 'cabal' of 'permanent government' protected senior Ferranti managers from any public accountability for Ferranti's part in the ISC farce.[16] Unlike the more ambiguous relationship of peripheral firms supplying less specialised equipment to the arms complex, as managers of a strategic firm the role of Ferranti directors in the ISC debacle was secluded from public scrutiny. This was not simply an outcome of the relative sociability of established inter-personal networks, although biographical accounts indicate the importance of this. Rather, it reflects state dependency on

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16 Despite ISC's record of sanction-breaking contracts with South Africa and the granting of export licenses for precision-guided missiles compatible with nuclear or chemical warheads believed to be destined for both Iraq (via the United Arab Emirates) and Iran (via China) who were then at war when ISC precipitated the collapse of Ferranti in 1989 no official action was taken by the government except, that is, to rescue the ECR90 radar for the Eurofighter project by brokering a GEC takeover. James quotes (1995: 134-5) a letter to the Prime Minister, John Major, from Labour MP Michael Meacher asking why for six weeks before the ISC affair became public knowledge ISC were free to remove secret records from its West London headquarters and '... why there was no official inquiry and no report to Parliament on the complete destruction of the country's third largest defence contractor'.

the relative technological exclusiveness of the capabilities represented by a strategic firm like Ferranti.

Institutionalised bargaining is central to any restructuring of the UK arms economy. Although inefficient compared to the centralisation and concentration enjoyed by the US aerospace industry, semi-integrated European collaborations are the only viable accumulation strategy open to medium-level states like the UK who wish to avoid becoming completely dependent on technologies available only through an Atlantic arms economy.[17] In trans-national collaborations like EFA, *juste retour* principles resulted in a patently inefficient division of labour designed politically by national governments collaborating to retain European capacity independent of the US aerospace industry (Walker and Willett, 1993). Within Europe, however, collaborating nation-states remain competitors. At the same time as collaboration, nationally-based strategic armament firms and their governments constantly lobby for improving their national shares of the development and production contracts. Looked at from this perspective, the politico-strategic advantages of EFA for the UK state overrode other concerns about bureaucratic inefficiency, duplication and waste.

State capitals and private property rights

How does the idea of strategic capitals within a state capitalist complex help to account for the restructuring of state/capital boundaries and the apparent reversal within the arms industry of the domination of 'the private' by the authority of 'the public'? The national basis of extensive accumulation of armaments by state capitalist forms of organisation was clearly faltering by the late 1970s. 'Politically' the public authority of the state found itself undermined where it engaged directly in organising and mediating the contradictions of armaments production. 'Economic' issues at Ferranti and Rosyth, say wage rises or investment programmes, simultaneously became 'political' ones. For example, in the cases of

[17]Between 1993 and 1997 the US arms industry underwent an intensive process of mergers and takeovers after the government made it clear that they would not intervene to support failing capitals in the competition for declining arms contracts. This culminated with Lockheed Martin's $11.2bn takeover of Northrop Grumman giving it a turnover of $37bn, more than the combined turnover of British Aerospace and GEC-Marconi of the UK, Aerospatiale and Thomson-CSF of France and Daimler Benz of Germany. Even though the total European defence spending, $130bn annually, was less than half of that of the US, the national fragmentation of European procurement programmes and the political disputes of collaborative projects like Eurofighter, the Horizon frigate and the Future Large Aircraft, meant that the economies of integrated development, production and procurement had to be foregone. To compete with the US leading aerospace capitalists are demanding that a European armaments complex must succeed nationally-based complexes (Landberg, 1997).

the Ferranti bailout or the disruption to nuclear refitting caused by the 1972 strike at Rosyth the state was subject to the conflicting demands to maintain productive continuities but also to maintain controls over labour. How the balance between disruption caused by managerial controls and continuities in production was arrived at varied according to how existing relations in particular workplaces coped with conjunctural moments of crisis.

The tension between national state capitals and internationalised private capitals created a new crisis of organizational forms. As the 1980s progressed the Thatcher governments sought increasingly to unleash competitive 'market forces', entrepreneurial managements and private ownership of the means of production as the way to resolve what was seen as the problem of productive inefficiency.[18] This set of marketisation policies meant that 'for the first time in history nearly all armament production was in the hands of the private sector' (Edgerton, 1995: 184). But however synonymous special sales of assets may have become with the term 'privatization' they do not adequately cover the 'remixing' of the public and private between the mid-1980s and mid-1990s. Political account needs to be taken of the specific sectoral characteristics that the privatising model takes, engaging what Ramanadham (1993: 527) called a 'rich repertoire of modalities and techniques'.[19] The very malleability of the Thatcherite concept of privatization allowed an ideological flexibility where tactical digressions based on political expediency reshaped overall goals. In short, the seemingly hegemonic sway of privatization was more apparent than real. It did not step into the light of day *deus ex machina*. In short, privatization had to be struggled for, lending itself ad hoc to such shifts in emphasis as immediate conjunctures permitted.

Ferranti was one of the earliest privatisations of the 1980s, although even then political bargaining and compromises ensured that protective mechanisms were put in place before the sale to prevent a swift, hostile GEC take-over. After the Falklands War temporarily suspended re-organization of the arms industry the 'further and faster' turn to the private model of the

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[18] Thus the main firms within the industrial-military complex which were privatised had never been in private hands previously. These included asset sales, Amersham, BNFL, UKAEA, Royal Ordnance and, of course, private management of the Royal dockyards and AWRE, Aldermaston. Sales of formerly private firms included for military aircraft, Rolls Royce, Ferranti, British Aerospace, and for warship building, Yarrow, VSEL, Cammell-Laird, Swan Hunter. (cf, Edgerton, 1995: 184).

[19] Some of this 'rich repertoire' of privatization was rehearsed in the arms industry. Wartime 'shadow' factories, owned by the state but under the control of private firms, and the intricate mosaic of private arms producers in the 1950s and 1960s indicate the continuing role of private control of arms firms before the wave of nationalizations in the 1970s (Edgerton, 1995).

second term Conservative government restored the impetus. The reorganisation of defence management undertaken by Michael Heseltine as Defence Secretary between January 1983 and January 1986, relied on a redefinition of efficiency and managerial accountability on more distinctively commercial, rather than administrative lines. As the 1984 Defence Estimates summarised this approach:

> Generally, ...the only work carried out within our own defence support organization should be that which is essential for clearly proven operational reasons or where there is financial advantage for the tax payer. The Department is thus seeking to improve competition in a number of ways: through privatization, contracting out, hiving off or partnership with private enterprise. (Cmnd. 9227-I :para. 241)

The actual application of the private model depended on a rationale of technical, 'generic' qualities applicable across sectoral boundaries. This reformulation of the public/private relationship was typically couched in terms reminiscent of the rhetoric of economic rationality, 'economy, efficiency and effectiveness', employed by nineteenth century liberal critics of state dockyards like Barry (see Haas, 1994). Wherever state assets could not be directly sold off to private capital, the state increasingly began to act as brokers of contracts and purchasers of equipment. In this way responsibility for day-to-day management of production, of living labour, could be evaded.

Privatisations have as their main aim then the restoration of the formal separation between a private sphere of surplus extraction and a public sphere of sovereign statehood. One of the key ways in which state power can be strengthened is by withdrawing 'politics' away from any explicit entanglement with productive relations. As such privatisations were not only about rolling back the national state from production but also implied abolishing or curtailing 'internal states within states'. Viewed in this way privatization represent merely the torn half of a ripped page: the private half that wants to consume labour power directly without waste. The other half, the public half which wants to 'purify' political power, is set aside. The so-called 'tail' of military industry is restored wherever feasible as the legitimate sphere of private interests, while the state 'body', and its military 'teeth', become exclusively public. Rather than seeing the 'strong state' (public) and the 'free-economy' (private) as antinomies, they are better understood as differentiated moments in the restructuring of surplus appropriation (Gamble, 1979; 1981).

With the emergence of the contract state, the twin processes of marketisation and managerialism had as their central aim to the dissolution of bureaucratisated employment relations, to loosen the social obligations imposed upon state employers by earlier capital/labour compromises around the internal state. Managerialism was assumed to be a set of techniques which could be applied generically across the public/private divide and provide a solution to political problems where the possibility of a once and for all rupture from the state was excluded (Pollitt, 1993; Cutler and Waine, 1994; Clarke and Newman, 1997). This view was clearly expressed, for example, by Levene and Heseltine in preparing contractorisation for the dockyards and later by Alan Clark in brokering GEC's takeover of Ferranti. Managerialism was favoured because if held out a promise of raising productivity, of reducing the costs and times of labour, but from within a safe, neutral-sounding discourse of 'better management', 'efficiency', 'value-for-money' and effectiveness. Behind this stood a barely concealed hostility to organized labour and the rights enshrined by internal bureaucratic employment relations. Marketisation was intended to discipline labour and its organizations and foster worker anxieties through the semblance of competitive accumulation.

Where the state restructured the boundaries between the public and private its immediate trigger was political and only indirectly economic (Ferner, 1988; Fairbrother, 1994, Pollitt, 1993; Cutler and Waine, 1994). To be sure, in advancing an all-embracing panacea of contract, market and management ministers and officials made economic rationality central while its opponents, principally the Labour Party and the trade unions, stressed its ideological, irrational character. Above all, the repertoire of contract and market mechanisms were intended to impose allocative command on individual capitals, albeit regulated by public bodies committed to driving down costs, while productive command was passed to management teams positioned between a profit-seeking corporate centre and the regulatory authority. A range of immediate goals thus overlapped which included reducing state spending and giving private firms profit-making opportunities, premised upon disciplining labour better by passing on labour problems to contractors. It should be clear, however, that 'the state' cannot be simply juxtaposed to 'the market' in this way. In the cases of Ferranti and Rosyth reality made a mockery of attempts to 'purify' the public and the private.

The attempt to increase managerial control at Rosyth by introducing commercial management threatened productive continuities by heightening workplace unrest. Guarantees from national trade union leaders that productive continuities would not be put at risk by the anti-

privatisation campaign meant that managerial control would be contested at the level of the institutions of public power, House of Commons, House of Lords, and the High Court. Despite this, locally the unions organised the disruption of production on a frequent basis, as Chapter 4 shows. Where Ministers and Officials were prepared to risk some disruption at Rosyth to install a managerial prerogative, in the case of GEC saving EFA by taking over Ferranti continuity was paramount. Thereafter, direct managerial control assumed a greater priority for GEC, to the extent that it provoked an unexpectedly militant response from sections of the workforce jeopardising the continuity that the GEC takeover was supposed to ensure

Value and the social division of labour

So far, the focus has been on technical-organizational problems and solutions. Restructuring might seem to be simply a response to observably deficient forms of social organization. On the basis of private control of production and the marketisation of consumption, restructured state capital would become more organizationally efficient at accumulating surplus labour. But what underlay the imperative to restructure in the first place, which, after all, had been avoided for nearly four decades?

For Marxism the law of value must play some part of any understanding of restructuring. But taken as a discrete sector, in the arms industry the law of value clearly does not operate in the way Marx specified. Since its output is consumed directly by the state armaments do not re-enter into general circulation as either production or consumption goods and thereby submit to the discipline of abstract exchange values. No independent measurement of socially-necessary labour exists. As Kaldor (1982: 271) put it: 'Clearly more labour goes into the production of arms than the wage equivalent paid to those who perform the labour; but this is not reflected in the profit, since the price of armaments is an arbitrary political decision'. Any profits made within arms production are paid out of surplus value created elsewhere which the state appropriates as general taxation and borrowing and spends as state revenue on armaments.[20] Economically, this functions as waste since arms are either consumed in the act of destruction

[20] As Engels (no date: 189) put it in Anti-Duhring, 'Force, nowadays, is the army and navy, and both, as we know to our cost, are "devilishly expensive". Force, however cannot make money; ... money must be provided through the medium of economic production; and so in yet another way force is conditioned by the economic order, which furnishes resources for the equipment in maintenance of the instruments of force'.

or are stockpiled in readiness for the act or threat of destruction until obsolescence. The labour process is organised instead around the production of use values in the form of enabling the state access to the technical means of destruction. Relations are not therefore regulated by spontaneous market mechanisms but by administration and bureaucracy. In this sense the labour process within Ferranti and Rosyth, and within the arms industry generally, is unproductive.

However, the partial negation of the law of value in arms production does not at the same time mean its complete abolition (Harman, 1984; Howl, 1991). To suggest that this is the case is to adopt a static 'ideal-type' for capital with arms producers entirely isolated from the process of the circuit of the self-expansion of capital.[21] Such isolation means that only use values created by concrete labour are produced by Ferranti, GEC, BAe, dockyards, and the like. Yet this relies on an idealised or reified view of 'pure' market relations.[22] Certain formal categories, state, market, commodities, wage labour, exchange value, profit, are employed as abstract measures of neat, isolable variables. Idealised classificatory models fix in time and space concrete social relations within a complex, many-sided process of restructuring.

Instead of employing ideal classificatory models, how the social relations of arms firms, or any other organization, become materially subordinate to the circuit of capital needs to be examined (Haynes, 1983). Regardless of whether arms producers are in the public or private sector the state regularly compares the cost of arms production with abstract labour. That is why cost-plus contracting was limited by perceptions of an acceptable rate of return, or appropriation of surplus, based on wider capital formations. Official accounting methods and a formulaic rate of return could always be contrasted negatively to the disciplines of idealised market relations (Kennedy, 1983). Fixed price contracting merely altered the terms of state

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[21] Competitive accumulation drives capital to innovate and so reduce the amount of labour time spent producing commodities. In this way pressure exists to raise labour productivity by comparing different concrete labours through an exchange measure for abstract labour, prices. 'Socially necessary' labour time is thus determined after production, a posteriori, in the market. However, the dynamism of competitive accumulation centralises and concentrates capital. The result is increasingly fewer but larger capitals. An influence over price-setting is exerted by the largest capitals. Prices become no longer subject to an objective, independent measure of socially necessary labour time post-production but are consciously formed in or before the production process takes place. The law of value is therefore partly negated as a silent compulsion acting on capital and labour.

[22] Even in the civilian economy all sorts of mediations or distortions to the law of value mask concrete levels of relative productivity. For example, as capital becomes more centralised price competition in some

contracting in an attempt by the state to economise. Again, as in the case of the dockyards, the state was impelled to enter close regulatory relations to validate the claims of dockyard management that all the work they were charging for was being performed efficiently. Moreover, an assumption of rising labour productivity was built into the customer's pricing system. And due to unforeseen changes in 'product market' conditions, when nuclear submarines due to enter Rosyth's programme of work were scrapped, Rosyth claimed and received compensation from the MOD.

Arbitrary price-setting carries with it a danger of viewing the valorisation process as narrowly bound-up with isolated individual capitals. Valorisation is a social process. For firms like Rosyth and Ferranti valorisation is driven by the competitive accumulation of armaments by states. But even this level of concretisation is too one-sided. States do not accumulate armaments without regard to wider developments in the economy. More generally, Marx (1973: 106) argued that, once established, capital as economic power predominates over all other forms of industrial organization, conditioning all forms of productive activity as a 'general illumination which bathes all the other colours and modifies their particularity'. The state is thus constantly concerned to compare levels of productivity with 'civilian' industry and the arms industries of competitors as measures of abstract labour. Even the notorious cost-plus contracts were attempts to set minimum costs of necessary labour and maximum rates of profitability *compared to civil industry*. Fixed-price contracts attempted to set this comparison even more rigidly but could be defied by imperfect knowledge on the part of the buyer (also common to so-called free 'market' relations) and unanticipated productivity increases. Even fixed-price contracting, which sets an explicit sum at which the purchaser is willing to buy, does not resolve this as the Ferranti Bloodhound scandal of the 1960s indicated. Privileged internal knowledge of production costs and the difficulty of state officials administering prices and profitability externally and bureaucratically ensure that price-bargaining is an unequal process. Where internally a sector was relatively undifferentiated and enclosed, such as the naval dockyards, studies at regular decennial intervals attempted to compare productivity levels to dissimilar private repair or construction yards. Moreover, even after commercial costing practices were introduced by the MOD, as in the move to risk-pricing in the late 1980s at Rosyth, by its own admission accurate information on real prices, productivity and labour costs continued to be unobtainable. MOD judgments were often little

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civilian sectors has been replaced with product competition in the form of brand loyalty, quality, design, packaging, service.

more than informed guesstimates with the initiative resting with the contractor to take advantage of labour/price ambiguities to claim enhanced performance (HC 39, 1993; HC 829, 1993).

Attempts to create market relations based on exchange value were largely contractual fictions. On the one side, the state wanted to drive down the cost of arms production and maintenance but, on the other, needed to preserve such productive capacity as it deemed 'strategic'. An impersonal disciplining force could not be brought to bear and an 'impure' state capital formation persisted.[23] Where the state continued to define capitals as 'strategic', profitability was designed to ensure firm survival through a process of political bargaining. Military capitals, post-privatization, needed to be rendered profitable otherwise company boards might well exit from unprofitable lines. However, the terms of the bargain became tougher for individual capitals as competitive uncertainty in the sector threatened accumulation strategies through the falling demand, loss of core contracts, takeovers and mergers. For instance, with government backing GEC assumed sovereignty over the productive capacity represented by Ferranti in Edinburgh but only as part of a wider political relationship dedicated to sustaining organizational interdependencies around EFA: only those parts of Ferranti engaged in the 'strategic' EFA project were originally taken over by GEC. An albeit fragmented and fragile trans-national European aerospace complex, constructed through careful techno-diplomacy, threatened to collapse with the removal of one key piece, Ferranti. Once built the coalition of support for EFA needed to be maintained. In contrast, Rosyth became much less strategically important to the state in the first half of the 1990s, outflanked by an aggressive sectoral rival, DML. After DML successfully built an alternative political coalition to challenge Rosyth's core status within the dockyard sector Rosyth was no longer subject to the advantages of reverse adaptation for Trident refitting. Only the mobilisation of Scottish political support prevented closure and enabled it to play a subsidiary role around surface warship refitting within the dockyard complex.[24]

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[23] In this arms production has much in common with the privatised utilities. Similar problems of incentives and discipline led to the setting up of regulatory authorities. Profit formulae were a political response to the absence of exchange value. What O'Connell Davidson (1993: 39) says of the regulation of privatised water has always applied to the arms industry. There the price limitation formula 'K' appears as 'a precise and scientific instrument which takes into account a host of objective economic criteria' when, ultimately, it is in fact the outcome of a social bargaining process between the company and the government.

[24] Rosyth's fortunes may well revive with the election of a Labour government in April 1997. The first Labour Cabinet found the so-called 'Iron Chancellor', Gordon Brown, MP for Dunfermline West, releasing £207 million for a submarine refit at Rosyth almost immediately on taking office. The new Defence

As a result, then, of differing historic relations between state and capital in the two cases the state was able to extricate itself from financial and managerial responsibilities in different ways. The organised political capacity of the Scottish lobby bequeathed to the contractors at Rosyth were able to stall the immanent rationalisation of British dockyard capacity in the first half of the 1990s. In the second half, the sale of the dockyard assets at Rosyth to Babcock in 1997 recast planned rationalisation not as a social and political problem to be managed by the central state but as exclusively one for a sovereign private capital. Yet this is belied by the bargaining over the sale of the assets which hinged on how redundancy pay liabilities would be funded. The state assumed responsibility for financing the buy-out of severance entitlements held by the workforce, minimising the economic cost to the private owners and the political cost to the state of dismantling the internal state. In contrast, lacking this kind of direct subsidy GEC moved with haste to reduce redundancy entitlements at Ferranti to statutory minimum levels. Indeed, while GEC acquired Ferranti (and the EFA contract) relatively cheaply it inherited liability for the performance, cost and delivery.

Conclusion

The argument of this chapter has been that global, national and local restructuring be grasped dialectically as fragmented and contradictory moments within a dynamic, unified process. As such, each solution re-establishes contradictory forms anew: there is no final restructured state to be attained. It was argued that the inner-connections and complexity of restructuring can only be known adequately through the specific form that surplus labour and political domination takes. Attempts by the state to contain and regulate the 'uninterrupted disturbance of social relations' and the uneven development of the forces of production within the national form seemed to fix the boundaries between the public and private for an eternity. Contradictory demands on states to mediate national-global tensions, particularly those

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Minister, George Robertson, formerly campaigned on Rosyth's behalf during the Trident competition when shadow Scottish spokesperson. Although probably apocryphal, reports indicate the changed political geography of military privilege: 'within minutes of his appointment Mr Robertson was presented a cheque made out for £207m, and asked for a signature. The new minister stalled, consulting Gordon Brown. The "Iron Chancellor" was initially reluctant to part with the cash, but relented immediately when he learned that the money would be spent on a submarine refit at Rosyth. Rosyth lies in Mr Brown's constituency' (Castle, 1997). The politics of locating defence employment and contracts are expected to differ from those of the Major government to the extent that defence workplaces and workforces in Scotland will be able to exercise more leverage than before the end of the Cold War. Although how far 'marketisation' will be rolled back remains to be seen with a new state-sponsored Defence Diversification Agency being proposed to encourage civil uses of military technologies.

between the relative mobility of capital and a relatively immobile nation-state, through the extended accumulation of armaments resulted in the state becoming deeply entangled in the appropriation and re-direction of surplus labour. Managerialism, privatisation and marketisation attempted to restore command to the pure, neutral discipline of competitive private capitals. However, within the armaments complex, Ferranti and Rosyth were protected as 'strategic' because of the state interest in accumulating armaments. A dialectic of state capitalist dependency and autonomy mediated global-national-local tensions As such, solutions based on sovereign, private command over production were self-contradictory. It is to this 'privatised' sphere of production that the next chapter turns.

Chapter 12

Dimensions of Restructuring 2:

The Firm

*Is our theory that the **organization of labour is determined by the means of production** anywhere more brilliantly confirmed than in the human slaughter industry?*
Marx to Engels, 7 July 1866

Against atomistic views of the state, economy and 'civil society', the previous chapter attempted to specify the institutional specificity of strategic firms within the arms industry complex. Inter- and intra-complex competition and collaboration was understood dialectically, as an internally differentiated process operating across global-national-local frontiers. Within an expanded Cold War arms complex, productive relations were regulated in detail in all its manifestations. This gave the complex the appearance of an autonomous techno-national phenomena, isolated from various other 'logics' of the state, 'civil society' and the economy. This chapter will draw on evidence from the case studies to make a general case for locating both subjective and objective elements as mutually conditioning within the process of restructuring. Far from being an automatic unfolding of objective structures dictated by external forces or the expression of a single organisational will, restructuring attempts to reconcile contradictions between the forces and relations of production. External stimuli for change needs to be related to processes internal to the workplace. Internal change is conditioned by differentiated organisational capacities accruing to state, capital and labour.

Already in the 1960s, Kidron (1967: 12) had summarised the general nature of the inter-connections between state, capital and labour under a permanent arms economy:

> The permanent arms economy tends to make labour scarce and skills expensive for an individual capital, while simultaneously enlarging the size of the typical capital and concentrating power in a few mighty, predominately industrial, complexes. These firms are forced to consider likely reforms - material concessions to workers - well before they make them, when considering their own long-term plans. At the same time, the state is forced into active management of the economy and into large-scale productive employment. Its apparent political neutrality wears increasingly thin, its policies become increasingly manifest as capitalist policies ...

This is the general context within which the pressures for restructuring the permanent arms economy were stored up. For the state, welfare functions were being lost to industry, (such as occupational pensions, sickness pay, workplace surgeries, company housing), and it found itself acting increasingly in the role of capital; for large, private capitals, company strategy included adopting a welfare function as an indispensable tool for enrolling labour; and, for labour, conflicting loyalties existed between localised occupational and company identity and self-sufficient shop steward organisation. The following two chapters will enlarge on the basic outline of Kidrons' seminal analysis. Various attempts to restructure the arms complex foundered. Crises were met by short-term solutions, a productivity deal here, a re-financing there, public pay freeze here, an internal re-organisation there. No planned, coordinated means of raising the rate of surplus value for the state capital complex existed. Instead, it was riven by contradiction.

This chapter will suggest that at the heart of firm restructuring is a contradictory process of labour redundancy, that is, the various ways in which living, social labour is expelled from the internal labour process. To avoid any misunderstanding, this argument does not imply an automatic process of capital substitution and labour de-skilling. That option was curtailed by technical complexity and the jobbing and batch nature of the production process in the two firms studied. Instead, it will be proposed that relative preferences were exercised by capitals for internal, detail or technical division of labour and external, social division of labour. Other options, apart from de-skilling, exist to create worker redundancy. One is to displace labour by buying-in semi-finished and intermediate goods from the market. Another is to dismiss workers and extend the versatility of remaining workers, functional flexibility. Still another is to hire labour only when required to meet workload fluctuations, numerical flexibility. Nonetheless, however much capital would like to expel living labour by technical or social means, it remains dependent on its active creativity in the production process. Small or single unit production of the kind undertaken in defence electronics and warship refitting, depends on an extended, technical division of labour (Meegan, 1988). Firm choices are limited by this dependency and, in general, seek to eliminate or control market uncertainties affecting work organisation internally.

Some consideration will first be given to competing views of the firm and the possibilities for exercising 'strategic choice' assessed. Then it will be suggested that restructuring is an attempt to make the cash nexus determinate for productive and allocative efficiencies. This is done

through an accountancy-driven organisational regime supplanting the previously dominant technical-administrative regime. The latter regime gave rise to an expansive accumulation strategy. So long as absolute levels of output were a more important consideration in firm calculations than productive efficiency, as they were when value criteria was suspended under the permanent arms economy, the cumulative adding-on of productive capacity proved a rational accumulation strategy. In contrast, the accumulation strategy pursued through an accountancy regime is based on reducing the level of sunk investment costs through 'capital-narrowing' and only rarely modernising the means of production through a radical 'capital-deepening' strategy. Management is considered next, but not as a fully unified agent. Within management, competing functional specialisms, with corresponding and conflicting ideologies about living labour, threaten to pull apart. A state capital labour process is identified, where a technical-administrative regime attempted to hold management together around a coherent view of labour but at the expense of hardening productive inefficiencies. The 'internal state' partly de-commodified labour. The administrative regulation of social need by the 'internal state' weakened the disciplinary mechanisms of 'latent destitution' acting on commodified labour. Attempts to restore such disciplines through the re-commodification of labour power continue to be limited, insofar as firms remain 'strategic' within the state capital complex and dependent internally on the specialised versatility of living labour. As a contrast to this broad brush approach three alternative views of relative firm autonomy and dependency will be considered next.

Three views of the firm

At least three basic approaches to answering questions of agency and determinism at the level of the firm can be identified: internal incoherence, environmental adaptation and institutional. First, some recent labour process and radical organisational theorists alike claim that the separation of corporate ownership from control severs, or at least seriously weakens, the exogenous pressure of accumulation on the internal structures of work organisation (Cohen, 1987; Rowlinson and Hassard, 1992). The internal organisation of firms is one of atomised, competing management agents, indeterminately constructing identities or 'subjectivities' around the exercise of control. An almost infinite variety of organisational forms become possible as the unintended consequence of a spontaneously created negotiated order between competing professional identities and the anxieties of individuals. Taxonomies of power, domination and control begin to replace relations of exploitation, class struggle and profits as

the central focus of workplace restructuring. Alongside this, central concepts of Marx's political economy, such as the labour theory of value, are passed over as outdated embarrassments to the more serious stuff of model-building and complex typologies. As Rowlinson and Hassard (1992: 79) argue, 'The diversity of labour process strategies pursued by management is seen by labour process theorists as support for a mangerialist position, confirming that corporate management enjoys considerable autonomy and is able to pursue its own interests independently from the requirements of capital'.

A second approach, that of neo-classical derived business studies, treats the firm as a species of sub-Darwinian environmental adaptationism. The unitary agent of the firm adapts freely to its changing environment or faces extinction. Campbell and Goold (1987; 1993), for example, tightly fit firm strategy and organisational form to market conditions. For example, financial control companies, such as GEC, operate in relatively stable markets through strong central control over financial performance and devolved operational autonomy to divisions and, within them, stand-alone business units. Strategy and corporate structure is determined by clearly available preferences for optimising firm efficiency. Contingency theory is, perhaps, the best known form of environmental adaptationism within mainstream organisational studies (Donaldson, 1985). This approach selects one or two key variables, such as market, technology, size, products, which determine the relationship between environment and the firm (Hales, 1993). Even from within the more critical 'restructuring school' similar assumptions operate. For example, Lovering argues that 'companies restructure production to adapt, in a manner of their choosing, to competition in the product market' (Lovering, 1989: 215). This gives rise to a 'managerialist' perspective, which explains restructuring primarily by earlier organisational deficiencies to be corrected by more efficient organisational forms. At least five options are open: rationalization, intensification, technical change, merger and the fragmentation or further integration of production. Here, at least, the firm is not free-floating. But variation in work organisation gets reduced to a matter of choosing, from among different permutations, a correct and necessary firm-survival strategy.

A further, more sociologically-inclined approach is that of radical institutional economics. Here the idea of a state capital complex, as against a spontaneously ordered 'market', is compatible with the institutionalist emphasis on inter-firm networks. Unequal relations between firms, say between small sub-contractors and large prime contractors, are partly ameliorated by establishing durable relationships based on trust and loyalty. Close, 'preferred

supplier' arrangements in the armaments complex institutionalises such non-market exchanges. Within the firm, a similar stress is put on non-contractual elements, especially the evolution of a stable set of relations based as much on internal cooperation, trust and loyalty as on atomisation and competitive self-seeking. Firms are not simply 'islands of planned co-ordination in a sea of market relations' (Richardson, quoted by Hodgson, 1988: 209). Rightly, neo-classical appeals to 'survival of the fittest' types of firm 'efficiency' are rejected as depending on a naturalistic process of random selection or mutation towards the efficient form.

Child (1997) has recently indicated the compatibility of an institutional approach with the idea of 'strategic choice'. Although Child is critical of the kind of formalistic, organisational reification also being challenged here, he wishes to employ Giddens' notion of structuration to overcome the lacunae in institutional approaches. Structuration processes mean simply that actors and structures evolve through an adaptive learning process. Unfortunately, this move merely duplicates the formalism of the structure/agency dichotomy, with agency ultimately accorded primacy despite the frequent appeals to 'objective', limiting conditions. Vaguely, structural change is posed as a 'matter of degree' between the subjective and objective structural dualities of enactment and constraint (Child and Smith, 1987:570). Both 'strategic choice' and institutional approaches share some of the same general problems. First, the firm is 'over-socialised'. Capitalist firms are not merely institutions of trust overcoming self-seeking 'opportunism', or of sectors being more or less adequately 'cognized'. Capitalist organisations, instead, reflect the structured antagonism between wage labour and capital (Thompson and McHugh, 1995: 75-6), where opportunism and trust or, in labour process theory terms, despotism and hegemony, are in creative tension. Second, 'dominant coalitions' in capitalist firms are given analytical centrality and subordinates' own interpretations and actions are relegated in the process. Third, organisational change is downplayed in favour of the persistence of stable organisational forms in a given environment. Firms develop a protective function which store and reproduce a large number of 'gene-like' habits and routines and learn incrementally through 'structurated' activity.

Organisational crisis is, therefore, distinct from market crisis: 'Whilst the firm too will change and evolve, sometimes with rapidity, internally it is not subject to the buffeting waves of sometimes inexplicable speculation which are characteristics of volatile markets where agents relate to each other with more tenuous and short-term commitments' (Hodgson, 1988: 208).

Here the relationship between the 'stable firm/volatile market', or what Marx called 'anarchy in the market and despotism in the workplace', is reified with unmediated facticity by Hodgson. First, in a state capital complex it is not always clear where firm/market boundaries should be drawn. Indeed agonising over firm boundaries is a central feature of marketising armament production and consumption. Second, while the 'de-naturing' of the 'market' and the firm as historically-specific institutions is welcome, the institutional impetus for market and firm restructuring becomes less evident once the silent compulsion of accumulation and the value form are placed out of bounds. Third, management attempted to introduce 'market' processes inside the firm with 'stand alone' business units, internal markets, competitive bidding for resources, cost centre profit and loss accounts, and so on. Related to this, during the 1980s and 1990s the state has been seeking to transform all public sector complexes more closely along the lines of market exchange (Pollit, 1993; Stewart and Walsh, 1992; Le Grand, 1991). Hodgson (1988) might cope with this by invoking 'dominance' and 'impurity' principles. 'Impure' organisational 'variety' is created to deal with exogenous shocks, with one structure clearly dominating other 'impurities'. Finally, organisational change at Ferranti and Rosyth was in fact initiated by agents with 'short-term commitments' to local workplaces, government Ministers and Officials. Senior managers share an interest with company owners in accumulation. They are committed to a multi-divisional corporation, especially evident at GEC, and, unlike labour, only contingently to locally-based divisions. In both cases, workers endured 'buffetting waves of (only too explicable) speculation' within a volatile organisational setting.

Superficially, restructuring can therefore be grasped as the coming to institutional supremacy of 'pure' market exchange, although always reliant on 'impure' non-contractual elements to function. Similarly, chapter 11 warned against any ideal-purist use of the term 'market' when considering a state capitalist complex like armaments. Invoking an 'impurity' principle suffers from the same kind of defects as the ideal-models of distinct capital and state logics. Specifically, the specialized nature of exclusive state demand for armaments internalises 'impure' production and purchasing arrangements. Market mechanisms are largely expelled in favour of administrative institutions to allocate resources. But, as Chapter 11 further attempted to show, this has the effect of intensifying competitive pressures to a higher level of inter-state competition. Even where the law of value had little direct purchase for strategic firms within the complex the compulsion to reduce labour times to some measure of average social times could not be suspended indefinitely. When value claims were powerfully felt, as in

both cases of financial crisis at Ferranti, the state bailed the company out, or at least its 'strategic' parts, through direct ownership (1974) and, later, by brokering a private takeover (1990). The latter event signalled the ending of extensive accumulation and capital-widening as a viable corporate strategy for appropriating absolute surplus value. Subsequently, GEC have attempted to shift Ferranti to a finance-driven strategy around intensive accumulation and capital-narrowing by raising surplus value relatively.

These three conventional approaches to organisations assume in advance a radical firm/market distinction. Whether the firm is understood as an atomised aggregation of competing management agents, or as adapting to an external environment through a unified organizational will, or as a socialised institution based on trust and loyalty within the firm and across a sectoral network, the environment tends to be counterposed to the firm as an enabling 'opportunity'. These are not incorrect views of empirical reality, but each one-sidedly isolates variables in order to reflect empirical 'complexity'. The compelling force of competitive accumulation, acting through firms but seemingly outside of their control, needs to be re-emphasised.

A more rounded approach, I think, focuses on the organisational capacities of firms. Organisational capacities are conditioned by the two dimensions of capitalist relations of production. A 'vertical' dimension of hierarchical management-worker relations is founded upon worker's legal separation from the means of production. But since capitals are also legally separated from each other a 'horizontal' dimension based on capital-capital and capital-state relations also exists. As Nichols (1986: 143) argues, any adequate analysis of the restructuring of particular capitals 'has to take into account not only possible differences in organisational capacities on the side of wage labour (in particular, different trade union structures and strategies) but [also] differential organisational capacities and qualities on the capital side as well'. The 'labour side' will be dealt with in more depth in chapter 13. On the 'capital side' such capacities include organisational structures, the integration and co-ordination of the division of labour and the physical means of production. The organisation of production in this view is a political and social accomplishment and not principally the technical one that technical-organisational perspectives claim. Moreover, capital's organisational capacities must be viewed as extending beyond any narrow concern with direct controls over labour, although at the heart of any understanding of capitalist management of production stands the problem for capital of the refractory material of labour.

Sector and strategy

What are the 'differential organisational capacities and qualities on the capital side'? As concrete historical phenomena, organisational capacities cannot be merely read off directly from structural powers derived from effective possession of the means of production. Historical relations of dependency and autonomy condition organisational change within firms. With Child (1972; Smith et al, 1990) we can agree that firms possess an internal structure, a dominant corporate ideology and differentiated power relationships within management. This grounds firms historically. They are encumbered and enabled by founding ideologies and productive practices. As we saw with the case studies of Rosyth and Ferranti 'this suggests that the legacy of a firm's history will bear heavily upon its ability to effect a present transformation and that the change will co-exist with strands of continuity ...' (Smith et al, 1990: 313).

Until 1990 both sectors examined here were marked by strong continuities. Defence electronics and warship refitting continued to be shaped by ideas about firms like Ferranti and Rosyth as 'strategic'. Despite seemingly stable objective conditions uncertainty was built into both sectors in the various ways in which they were imagined. What was considered 'strategic' and attracted government support was ill-defined and liable to change. Nevertheless, Rosyth and Ferranti enjoyed fairly stable workloads down to 1990. Although the volume of refit work had been declining throughout the 1980s, Rosyth's special position as the lead nuclear refit yard protected it from closure in the first half of the decade and, also, from the kind of steep employment decline which took place at Devonport in the second half. Ferranti, meanwhile, positioned itself as a technological leader in a number of avionics technologies. Success in winning the contract for the Eurofighter radar confirmed 'technology-chase' as the paradigmatic sectoral survival path.

After 1990 the objective structural conditions of both sectors were irrevocably altered by the collapse in Eastern Europe of the Stalinist bureaucracies and the Warsaw Pact. While restructuring began in the mid-1980s with the marketisation reforms of Heseltine and Levene, new levels of uncertainty took hold of the arms complex. The new instability created risks and opportunities for some firms. Government stepped aside, at least formally, from direct interference in the processes of capital centralisation and concentration, as a few giant firms

came to dominate entire sectors. Competition for fewer contracts became fiercer at the prime contractor level, with the award of each contract assuming huge significance for firm survival.

Yet, it would be wrong to conclude that firms passively reacted to environmental change. At specific conjunctures firms marketised themselves and, in the process, marketised their sectors, as 'warring brothers' engaged in a competitive struggle for survival and advantage. For the first time, large budgets and resources began to be lavished on marketing and lobbying for contracts. At Rosyth, Babcock diversified into a number of markets unrelated to warship refitting, most spectacularly in the case of London Underground carriage refurbishing. But Babcock failed to anticipate a new cognition of the sector and a reshaped political configuration being established by Devonport Management Limited, (DML), over the Trident contract. Seemingly secure with the inheritance of Polaris refits and, ultimately, Trident, Babcock viewed the sector as relatively stable and predictable. But, in the absence of such large, lucrative and lengthy workloads, and following a series of mass redundancies, DML moved to destabilise the dominant sectoral paradigm. An unsolicited proposal to undertake Trident refits more cheaply than Rosyth revised the MOD's own cognitive approach to the sector. Babcock responded in kind, setting off a competitive train of cost-cutting proposals and counter-proposals. A new competitive ferocity engulfed the sector, stimulated by a 'hands-off' MOD, as Babcock and DML struggled for survival.

The relative ability to tap into local and national constituencies to form political alliances determined the outcome. Tied physically to specific locations, which had conferred advantages for so long, both firms attempted to employ the objective conditions of British electoral geography in the early 1990s to their benefit. Babcock's turn to the 'Scottish lobby' for backing merely reinforced how closely Scotland had come to be identified with the Labour Party and political opposition to Westminster government. Successive plant closures weakened the 'Scottish lobby's' influence at the political centre and highlighted the reactive and defensive nature of industrial campaigning in Scotland (Moore and Booth, 1989). On the other hand, DML could count on a vociferous and belligerently anglocentric political alliance of local Conservative MPs and naval interests urging the closure of Rosyth on the government. Although pressure from the Scottish lobby reprieved Rosyth, DML successfully restructured the sectoral settlement between 1991 and 1993. Rosyth was promised a ten year programme of surface ship refits, while DML took the lucrative contract for refitting nuclear submarines to Plymouth.

Just as Babcock trailed behind DML in re-imagining the sector, so Ferranti, in its dealings with ISC, misjudged its response to the threat of a GEC takeover. GEC had been steadily acquiring defence electronics and warshipbuilding firms until it had established near-monopoly status in both sectors. Concentration and centralization in its sectors gives GEC a powerful role both structurally and in the sectoral imagination. A conservative corporate strategy of financial-centralisation was aided by relaxed political controls over capital centralisation through mergers and takeover. GEC both deepened its interests in military electronics and diversified into warshipbuilding and nuclear submarines.[1] Alongside legal ownership and operational control, however, an undaunted GEC was made financially liable for the ECR90 contract. Nevertheless, this was part of a general GEC retreat from contested markets, innovative technologies and manufacturing, and sheltering behind a substantial cash mountain, fairly secure defence acquisitions and alliances and stringent centralised, financial controls. By the early 1990s, Williams et al (1990: 469) could justifiably argue that 'GEC is becoming a rentier capitalist firm whose profits increasingly come from short-term investment and shareholding in electrical businesses which somebody else manages'. As a strategic 'national champion', with a long history of close relations with officials and politicians, GEC, from Weinstock down, built and maintained political coalitions.[2] As one of a handful of British defence 'national champions', GEC can employ oligoplostic power to remake sectors actively, if not quite in its own image then at least by purposefully mediating the wider state capital complex. Although GEC enjoyed greater sovereignty over the means of production in Edinburgh than Babcock at Rosyth, the centre is less interested in the affairs of management than in financial results. Following the ISC debacle Ferranti became merely another piece in the GEC jigsaw, subject to GEC's centroclinal structure. However, the well-known emphasis on the operational autonomy of stand-alone GEC divisions obscured constraints imposed by

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[1] In July 1997, GEC also acquired the former Portsmouth dockyard, outbidding Babcock in the process.

[2] Former Conservative Ministers were appointed to the GEC Board. Lord Prior, former Conservative Employment Secretary, became Chairman of GEC in 1984. Richard Needham, a former Trade and Northern Ireland Minister, became a Director in 1995. Michael Heseltine was tipped to replace Lord Prior as Chairman in 1997 (*The Times*, 1 May 1997). Currently, Weinstock's replacement as Chief Executive, George Simpson, seems set to re-focus GEC as a European military firm. Mergers and alliances have been proposed with the defence interests of Siemens (Germany), Finmeccanica (Italy) and Thomson-CSF (France). A GEC takeover bid for Thomson was vetoed by the French government for reasons of 'national security', indicating the continuing fragmentation of the European defence industry may persist even while the concentration of the US industry reaches new proportions, with the Boeing/MacDonnell Douglas merger (Skapinker and Gray, 1996). Opposition to the merger by the EU on anti-competition grounds seems certain to be defied in the US.

central financial control (Williams, et al, 1985; 1990).[3] Within this, the Edinburgh factories have become subordinate units to Rochester (Kent), Stanmore (Middlesex) and Stanhope Gate (London). While the Edinburgh factories continued planning for product innovation this was at a considerable remove from the strategic discretion enjoyed under the old Ferranti set-up. In short, organisationally GEC shifted Ferranti from a relatively autonomous technicist-administrative paradigm to a heavily constrained accountancy paradigm combining local operational autonomy with centralised financial control.

Organisational capacities of the two firms were thus shaped by a range of dynamically inter-related, objective and subjective factors to do with government policy, sectoral conditions, electoral and industrial politics, and internal management regimes. Here I want merely to summarise the main objective and subjective shifts of the two firms within their sectoral contexts. Objective structural continuities and changes within the sectors Ferranti and Rosyth inhabited can be roughly summarized thus: state markets continued to connect both firms to global, national and local political and economic processes; oligopolistic nationally-based competition between Babcock and DML for Trident refits and transnational competition between GEC and Hughes for Eurofighter radar continued to be guided by the principle of political allocation and strategic capabilities; fewer, but larger, firms, now privately-controlled, compete for smaller workloads; and greater pressure exists to lower costs and pass more financial risk onto contractors through new state pricing regimes, tendering procedures, and self-funded R&D and marketing.

Subjectively, sectors were understood as follows: pragmatic, incremental change before 1990 gave way to radical shifts thereafter; both firms acquired new owners or controllers, involving a move away from traditional views of the sector as secure, predictable and cosy; new personnel were parachuted in at senior decision-making levels, GEC people in Edinburgh, Babcock at Rosyth; in one case, GEC provided the exemplary model for their sector of a finance-driven, multi-divisional firm, in the other, Babcock was forced to react to its sole

[3] How far this will change under Weinstock's replacement, George Simpson, is unclear at the moment. Simpson instituted a strategic review on replacing Weinstock, whose presence lingered as 'Chairman Emeritus'. Simpson's strategy seems to be to sell-off smaller GEC businesses, such as Avery weighing machines, and businesses in which GEC do not have global reach, such as telecommunications and household appliances, reduce the number of joint ventures where GEC is a junior partner, and to invest GEC's finance capital of some £6 billion selectively to become a major international defence firm (Garfield, 1997). With the imminent replacement of the GEC Chairman

rival, DML's, aggressive entrepeneurialism in re-defining possible outcomes for allocating the Trident contract; this required a new mobilisation of political forces, which ultimately favoured DML over Babcock. GEC, on the other hand, retained favourable political relations with state officials, although many in the 'Scottish lobby' blamed GEC for the scale of labour redundancy in Edinburgh after 1990. How organisational capacities are embedded within strategies for capital accumulation is considered next.

Accumulation: widening, deepening, narrowing

Strategies for accumulation are developed and fought out in concrete historical conditions. In the competitive struggle for capital accumulation firms both manage and are managed by the pressure to accumulate. To be sure, organisational forms persist over time. But the quest for competitive accumulation ensures that the regular patterning of organisational relations, albeit modified by incremental changes, is punctuated by phases of more or less radical restructuring both within industrial complexes and individual capitals. Disruptions of this nature are highly uneven with continuities and discontinuities co-existing in an uncertain blend. The melding of old and new organisational forms permits and constrains the mediation of the market by individual capitals on a new basis. After a time a new paradigmatic way of viewing the sector emerges and establishes itself as the dominant managerial perspective. There is no reason to suggest that the more recent form of accumulation will overcome contradictions any better than previous strategies.

In the accumulation of the physical means of production three options present themselves. First, 'capital-widening', or what Aglietta (1979) called 'extensive accumulation', expands productive capacity cumulatively through organic growth. In conditions where demand is expected to grow steadily, new capital is employed alongside obsolete or underused, aging capital stock (Perelman, 1987, 1996). This need not always raise the technical composition of capital, or in value terms, the organic composition of capital, since the employment of labour power also grows more or less in line with capital. Second, 'capital-deepening' occurs where an expected or actual severe downturn in demand competitively enforces a qualitative, discontinuous, radical replacement strategy to modernize and integrate the capital stock, increasing the technical composition of capital. Third, 'capital-narrowing' occurs where future demand becomes increasingly uncertain and total capital stock is reduced quantitatively as

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and Finance Director, Simpson hopes to reduce the continuing influence of the Weinstock legacy at

part of a drive to lower overhead costs, though without necessarily modernising the remaining constant capital. Systemically, one of the principal contradictions here is that between the socialisation of the forces of production, on the one hand, and the simultaneous fragmentation of the relations of production, on the other. Capital becomes concentrated, although not centralised, as increasing amounts of the means of production are accumulated by investment strategies. Up to a certain point, the adding-on of physical capital proceeds without any corresponding centralisation of ownership. That point is reached in the ending of capital-widening as an accumulation strategy and the attempt to introduce a more intensive accumulation strategy.

The first strategy, that of capital-widening, typified strategic firms under an expanding, seemingly permanent arms economy. At moments of technological 'step-up', tooling to accommodate the latest product innovations saw new constant capital deployed in an ad hoc way, without systematically scrapping older, inefficient capital stocks. Plant layouts evolved a chaotic and poorly integrated patchwork of buildings and machinery. The lack of a scrapping policy meant that phantom capacity of earlier, long-forgotten investment rounds was preserved in a dispersed physical layout of buildings and plant. New capacity was simply added-on, fitted around a ramshackle collection of infrastructure, machinery and work processes. This was particularly evident at Ferranti. There a capital-widening strategy spread increasing amounts of the physical means of production across the city and in a handful of other east-central Scottish locations. This was accompanied by repeated re-organisations for design, production and support functions. At Rosyth, major additions to the capital stock, such as buildings and plant for nuclear refitting, were simply added-on to existing facilities. For both constant and variable forms, capital use was 'sub-optimal'.

Productive inefficiency was the price of extensive military preparedness, for the predominance of use value of armament over any exchange value. The industrial capacity accumulated by uneven processes of capital-widening was based on a 'just-in-case' principle of readiness for varied and sudden fluctuations in demand for any particular combination of labour, instruments and material. Where the customer, the Ministry of Defence, did not supply *materiel* internally through its own supply organisations it contracted dedicated equipment manufacturers, 'makers', to procure finished sub-assemblies and components. Finding where

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Board level

the competitive limits to use-directed, capital-widening lay was not directly available to the firm. Neither firm conformed to the ideal-type of an independent producer engaged in atomised accumulation, unambiguously reacting to environmental pressures. Only the state, through its mediation of the national-global tension, rubbed-up against the competitive limits to capital widening.

Within the military state capital complex a social division of labour based on commodity exchange was severely curtailed. Internal resource allocation and prices were not set *a posteriori* by free (perfect) competition but administratively by *a priori* bureaucratic command and social bargaining. During the expansive phase of the permanent arms economy, state capitals demanded an uninterrupted reliable supply of labour, raw materials and components. Allied to the diseconomies of scope inherent in a capital-widening model of investment was a labour process developed principally around the extraction of absolute surplus value by extending the working day through overtime and shiftwork and the use of productivity deals to intensify effort. Despite Ferranti's use of automated draughting and machine tools, technical limits existed to raising productivity and reducing socially necessary labour times. At both Ferranti and Rosyth heterogeneous types of work were carried out, with each individual warship refit and successive generations of radar having unique characteristics. Complex technologies such as these cannot have fully explicit, stable and limited product specifications, or have the intensity of labour effort pre-determined technically. Instead, internal control systems were adopted to make labour internally variable. This task fell to a management itself subject to conflicting demands.

Here the internal control model of the detailed division of labour in production predominated over the social division of labour in exchange. Socialised labour weakened the disciplining effect of market mechanisms for regulating social need. To reverse this even partly involves establishing a social division of labour around commodity exchange, a re-commodification of production relations. Marketisation, in its various manifestations, attempts to give exchange relations a silent, compelling force. But as moments in an industrial complex, GEC and Babcock remain dependent on a dense web of socialised interdependencies, within the workplace and the corporation, with other organisations, and within the relations of state consumption.

Internal control extended beyond the workplace and into the local economy. As major, local industrial complexes in their own right, such firms could stimulate or inhibit the related productive activities of other capitals while strengthening its own local hegemony. Ferranti involvement in Scotland's institutional structures, for example, the (unsuccessful) Scottish Electronics Scheme of the 1960s, is one indication of this. A central role was also played in constructing local labour markets, where none existed before, through labour migration and training and its subsequent domination through benefit packages. This was particularly true where competition locally for skilled labour was weak, as at Rosyth (until the diversification of the west Fife economy from coalmining in the 1960s and 1970s), and for Ferranti, for whom holding onto highly trained labour was a perennial problem. Labour was hoarded in both cases to maintain a reliable labour supply in a context of rising problems of worker turnover, a sure sign of underlying discontent.

Restructuring is largely premised on a capital-narrowing strategy of accumulation. The routine re-investment of surpluses in the absolute expansion of capacity no longer applies. Ageing and phantom capital is being scrapped or rundown, with labour processes concentrated around a smaller and more intensively used stock of capital. Babcock and GEC vacated older buildings, scrapped outdated layouts, tools and machinery, cutback on auxiliary and maintenance functions, and ran down material stockholdings. Few firms in the arms complex elected for a radical form of scrap-and-modernise, a capital-deepening approach, although a rare example of 'business process re-engineering' will be discussed below. To deepen and upgrade the capital stock when demand may be suddenly cut-off through disarmament or government spending controls presents far too grave a risk. One result of the reluctance to modernise through a radical replacement strategy by the state capital complex, for example, was capital-narrowing types of cost-cutting in the competition for the contract to refit Trident submarines. Here the construction of the expensive purpose-built docking facilities at Rosyth, RD57, was abandoned and a patchwork of upgraded facilities accepted by the MOD. The dominant conservative tone of refusing to creatively destroy existing capital values in the overall interests of productive efficiency is a reflection of post-Cold War pessimism in future demand and profitable opportunities, allied to fiscal rectitude. The opportunism represented by capital-narrowing, on the one hand, mediates external pressures for productive efficiency, and therefore the modernisation of capital, while on the other, internal depression at the prospects for future demand, and therefore the obsolescence of capital. The result is an ad hoc, 'satisficing' part-modern, part-obsolete compromise.

Management

So far, changes and continuities within sectors have been discussed as uneven and differentiated while firms and management have been pictured as relatively unified, acting with a single organisational will. Firms, however, do not simply mediate external conditions through anything like a single, coherent strategy. Strategy, in the sense of a long-term, pre-planned set of organisational practices and ideologies, conceals the often short-term, pragmatic and opportunistic content of management functions. From corporate boardrooms to first-line supervision, management decision-making is rent with contradiction. Hyman (1987: 34-5, 30) points out the contradictory character of management,

> Any worthwhile analysis of the management function within capitalism must start by recognising the vital distinction between labour power and labour; the inescapable compulsion to produce surplus value; the resulting antagonism between the functions of capital and of labour, resulting in the need for managerial mechanisms of discipline and surveillance ... The contradictory role of management as both co-ordinator of a complex and often baffling productive operation, and simultaneously a vehicle of discipline and disruption, is almost inevitably reflected in consequential contradictions both *between* and *within* the various managerial specialisms ... For individual capitals - as for capital in general - there is no 'one best way' of managing these contradictions, only different routes to partial failure.

Management, on the one hand, integrate, oversee, plan and co-ordinate production. But, on the other hand, management fragment production both vertically, through hierarchy, and horizontally, through functional specialisation. Clearly, different specialisms within management operate at different stages in the valorisation process, mobilise competing professional ideologies and relate to direct productive labour in various ways. Contradictions within the firm are managed to minimise internal centrifugal forces. Consequently an ongoing struggle ensues to establish a hegemonic managerial ideology about labour and profit, over where precisely the balance between control and consent should be drawn. Braverman (1974: 67) drew the analogy with war. Management 'shared from the first the characterization which Clausewitz assigned to war; it is *movement in a resistant medium* because it involves the control of refractory masses'.

Internally, 'the control of refractory masses' involved an attempted shift from one hegemonic management regime, 'technical-administrative', to another, 'accountancy'. Capital-widening paralleled rigidly divided, hierarchical management functions built upon bureaucratic

organisational structures. This consisted of relatively closed entry to occupational disciplines, narrow, specialised functional competencies and qualifications, and strong professional identities. There was still not a single managerial profession as such, generalisable enough to encompass the gamut of technical-administrative practices, merely technical and industry specific gradations of control (Pollard, 1965). Nichols (1969:31-3) found that in the 1960s senior managers were gradually becoming better qualified, with the most common qualification of directors those of accountancy and the arts. However, even where former accountants became senior managers, as in the case of Toothill at Ferranti, the cash nexus was an insufficient condition of organisational form. Organisational capacities were acquired culturally by new managers, developed ad hoc over long years into a technical-administrative sedimentation. Insofar as the conditions for 'capital-widening' prevailed, the Edinburgh factories were guided by a technical-administrative approach, even under a Toothill, combining hierarchy with technology. Similarly, within the dockyards, the fusion of naval command and the body of the leading technical discipline, the Royal Corps of Naval Constructors, ensured that cost considerations remained subordinate to naval-technical ones.

In contrast, an accountancy regime is epitomised by the supposedly generic competence of entrepreneurial solutions to organisational problems and, in particular, their reduction to the cash nexus. Organisationally, stand-alone business units attempt to simulate the anarchy of the market internally. In this way 'wasteful' practices can be disciplined without the encumbrance of excessive rules and procedures. Services are bought and sold internally within allocated budgets and centres maintain profit and loss accounts. Pricing regimes within individual units should mean that average social labour times will be more keenly felt as a necessary, impartial force, thereby raising labour productivity. Cost centres are designed to make managers more commercially aware of costs through a system of personalised incentives and sanctions. Yet again, restructuring attempts to reconcile contradictory demands. The autonomy of cost centre managers to behave as sovereign, indifferent capitals in pursuit of their own individuated interests is negated by financial dependencies, political bargaining for resources and reporting performance back to the centre.

Organisational capacities are thus shaped by the tension between sovereign ownership, or effective possession, of the means of production and the illusion of financial autonomy. Financial controls tend to be located remotely within multi-divisional firms while operational controls tend to be proximate. The internal marketisation of organisational structures attempts

to resolve the remote/proximate contradiction. The attempts to replicate 'markets' within firm boundaries and to make managers more 'entrepreneurial' results in a peculiar mix of quasi-exchange relations, strongly tempered by hierarchical relations. Labour is not employed by an individual cost centre but by a division or subsidiary of the parent company and can be transferred within the workplace between cost centres as required. De facto dependencies on centralised financial control, fixed capital stocks and limited internal scope for altering any particular division of labour thus negate the de jure sovereignty of cost centre management. Operational de-centralisation and financial re-centralisation reduce business unit management to the question of disciplining labour as the only key variable over which proximate controls can be exercised (O'Connell Davidson, 1993: 54). This is to be achieved by making social need conditional on the semblance of market forces and re-commodified labour power, atomising further the socialised labour process, to drive down costs of labour power (exchange) and raise the rate at which labour consumes fixed capital (use).

A discussion of GEC would add little that is new here, since they have come to exemplify strong central control over budgets and conservative growth strategies (see Williams, et al, 1985). Although Babcock International moved towards financial centralisation in the early 1980s, considerable autonomy was sanctioned for the management team in charge at Rosyth. Internally, however, the Rosyth Directors retained strong financial controls over Divisional Managers. Only towards the end of its decade in charge at Rosyth did Babcock advance more fully towards an internal accountancy regime. Until then, cost accounting had been used as a basis for the monitoring of performance. For internal 'allocative' and productive efficiency the accountancy paradigm remained under-developed. One Divisional Manager indicated the way in which cost centre budgets attempt to impose average times and costs in contrast to previous practices.

> I now get fifty hours to make a pyrotechnic locker. I look at that before I take the job on. Can I do that in fifty hours? Answer: yeah, just about. They don't give you money. Every hour is twenty-five quid to me, twenty-five bucks. So if I look at it its fifty hours times twenty-five quid. That's an amount of money. Can I do it in that time? Answer: yes. If I give it to you to do knowing that fifty hours is about the going rate for one of these and you take sixty, I've got to say to you, 'look you've taken sixty. Next time, you need to be aware that this is a fifty hour job. The other guys do it in fifty hours'. Now it didn't matter in days gone by whether he took fifty hours or two hundred and fifty hours as long as the job got completed. Because we weren't talking budgets and restraints. Now its clearly budgetary. I get an amount of money and I equate that into hours or I get an amount of hours which I

equate into money. Nobody ever said to me, 'there's a job and it costs X amount of money and its got to be done'. What they said was,
'can you work overtime three nights a week and do you fancy a nightshift?'.
'Aye, what job am I on'?,
'I don't know yet but you'll be on something'.
Totally the reverse.

As chapter 5 showed, the customer organisation was still intimately involved in monitoring and recording productive activities. Babcock were also bound to the terms of the management contract for acceptable levels of performance, commercially-won contracts and diversification. The shift to a separate customer/producer relationship from a 'one arm' organisation unifying the Navy and the dockyard did not lead to a complete unlocking. Rosyth dockyard remains almost completely dependent on the Navy for its workload and, down to the sale of dockyard land and fixed assets in 1997, for access to the means of production through a leasing arrangement. The MOD relinquished direct control over dockyard operations in 1987 but not ownership of the means of production. Only in 1997 were dockyard assets sold-off. The diversification strategy at Rosyth,[4] formerly viewed as important though marginal to the main activity of nuclear submarine refitting, and given a fresh impetus from the early 1990s on, was subject to cross-subsidy for initial capital outlays and used labour flexibly from elsewhere in the dockyard.[5] All this administrative 'interference' inhibited giving full rein to an accountancy regime.

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[4] Forming the core of the Facilities Management Division of Babcock International, BRDL by the mid-1990s also managed Auckland dockyard for the New Zealand Ministry of Defence and had part-diversified into new product markets at Rosyth. While the diversification strategy suffered a major reverse with the loss of the London Underground carriage refurbishment contract in 1995, the logic of setting up independent cost centres for refitting granted a certain autonomy for Divisions to compete for non-traditional commercial work. Two entirely new 'business units' dedicated to winning non-MOD work were formed in 1991: the Rail Projects Division built on early incursions into rail carriage refurbishments, and entered into a joint venture with Siemens, Railcare, in 1995, while the Commercial Projects Division deepened the diversification strategy by focusing initially on core joinery and fabricating capabilities, which became Rosyth Joinery Products in 1994 and Babcock Rosyth Fabricators in 1995, and formed a North Sea venture, Babcock OGL, in 1992. This strategy led to the eventual purchase of the dockyard assets in 1997 and the formation of the Rosyth 2000 joint venture to commercially develop the vacant adjacent Rosyth Naval Base estate. Always intended as a fill-up to MOD work, by the mid-1990s diversification, although still subordinate to MOD contracts, had assumed a previously unexpected centrality to where Babcock saw themselves going.
[5] This parallels O'Connell Davidson's (1993:52-3) findings in the water industry, that fairly small cost centres are compelled to operate existing fixed capital and to shoulder some of the wider overhead costs associated with large scale activities.

One reason for this is that management itself is a collective labour process: management functions have to be produced and reproduced over time and space (Armstrong, 1989; Hales, 1993). Management control is inherently relational. Under the technical-administrative paradigm managers could be enrolled behind organisational goals by the opportunities opened up by a bureaucratic career structure based on the seniority principle and standardised employment relations. Long-serving senior, middle and first line managers at both Ferranti and Rosyth expressed gratitude that personal advancement was made possible under the old paradigm. Within the accountancy paradigm, careers become based less on steady progression and rule-following and more on financial results, cost-controls and meeting payment milestones. Risks, rewards and sanctions form the 'entrepreneurial' worldview. The new internal structures of 'market opportunity' are at once more volatile and insecure and also less attainable.

For some, the new emphasis on financial performance seemed to break the old, implicit bond of trust between management agents and overall organisational goals. Instead of particularist kinds of technical-administrative conscientiousness and reliability, universal controls were imposed over management through the short-term expediency of the cash nexus. A cruel, public descent was the destiny of some older managers who found the demands of the new paradigm difficult to handle. On the other hand, younger managers who owed their rapid rise to the new paradigm found the 'dynamism' and 'independence' required 'challenging'. Thus the problem identified by Armstrong (1989) of how capital enrolls the loyalty and trust of management is resolved through fear of failure and personalised rewards in the new paradigm instead of the old, ponderous service ethos. By a slow process of attrition new, younger managers, some coming from outside industry, began to replace older, traditional dockyard managers. At Ferranti, senior and middle management quickly found their status and autonomy diminished significantly. Entrenched senior managers were either removed, starting with the Managing Director, or compelled to adapt to GEC's financial control management style. As one put it, 'you need to bend with the wind'. The management employment relation became more individualised, with pay related to various quantitative measures of 'performance'.

Notwithstanding current enthusiasms for a new inclusive Human Resource Management and the supposed 'professionalisation' of British management, enrolling management behind organisational goals now becomes a matter of embracing alienation instead of compensating

for it. The elaborate administrative systems left over from earlier phases of development lent Ferranti and Rosyth management a quixotic character. Previous management incompetence was readily pointed to by new managers from GEC and Babcock. Nor was criticism confined to incoming managers. Workers' lack of co-operation in overcoming productive inefficencies in part stems from a perceived lack of management professionalism and purposefulness (Nichols, 1986). As Nichols' (1986: 218-9) argued, in conditions of 'casualism and job insecurity' worker resentment was channeled into sullen, non-co-operation with management,

> Badly designed jobs and products, and poor workflows and factory layouts, make those who have to produce under such conditions less than enthusiastic. *Laissez-faire* management has as its complement a greater reliance on workers themselves, in order to get the job out. Workers' whose experience leads them to think that 'management does not know what it's doing' may be less than keen to make good for management what they think management should have done already.

However, where job security was high, as at Ferranti and Rosyth, workers with long service reported resenting the amateurishness and high-handedness of how production was organised before restructuring. For example, demands in the 1970s to nationalise Ferranti were viewed by the unions as a way of ending the lingering personal control of the Ferranti family and modernising what was perceived as a shambolic management structure, operated as virtual fiefdoms of the divisional 'barons', a view also shared by the Industry Minister, Tony Benn.

The perceived shortcomings of technical-administrative regimes allowed the new ideology of entrepeneurialism and its primary carriers a sense of cohesion and mission. Recent management incumbents now inhabit organisations where stories about bad practice are legion among longer-serving managers and workers. Contrasts and discontinuities are likely to be amplified if this is the sole source of evidence. Significantly, when the 'de-layering' of middle management grades became a general path to corporate salvation in the 1990s, at Rosyth and Ferranti middle management were not nearly as adversely affected by rationalisation as manual workers. Qualitatively, however, the impact on managers differed in the two cases. Senior managers at Rosyth bemoaned the continuing hold of the Civil Service service ethos over non-industrial grades who, far from relinquishing their status and conditions of employment, found them enhanced under contractorisation. Paradoxically, the preservation of employment relations at Rosyth was guaranteed by the militancy of the industrial trade union campaign against agency management. Formal legislation, TUPE 81, preserved conditions until they were altered through mutual negotiation. Self-limiting practices of both management

and unions prohibited a radical rupture with the past. At Ferranti, in contrast, employee atomisation and division allowed GEC greater authority in disposing of and re-constituting managerial labour. GEC were prepared to act unilaterally to transform the employment relation, especially for managerial grades they held to be responsible for past inefficiencies.

Management ideologies range from seeing labour through the lens of passive quiescence, at one end, to active purposefulness, at the other (Smith et al, 1990: 346-51). At Rosyth, for instance, five levels of management reporting and command existed. First line supervisors, physically close to living labour, embodied the contradictions between exercising control and generating consent most sharply of all managers. They had to co-operate with and mobilise workers but also initiate disciplinary proceedings against recalcitrant members of work groups. At a further remove, dockyard Inspectors and Foremen, though symbolically close to concrete labour, had their contact mediated by supervisory and worker representative accounts. Even more thoroughly mediated was the control of the Divisional Manager, accounting to the Board of Directors for the performance of aggregate abstract labour. In the absence of labour transparency, upper managers attempt to generate veracity in the reporting of managerial subordinates through a descending climate of trust, creating fractious points of tension at each stage in the command and reporting structure. Ultimately, concrete labour took the form of abstract quantities on spreadsheets, highlighting various factors of performance, like 'utilisation rates', to senior managers. A whole battery of management support functions connected to productive activity exist for warship refitting, from time-recorders to the Drawing Office and Planning Departments. Beyond production functions, Training and Personnel specialists were also involved in generating worker consent and control but at a further remove, the former with imbuing young apprentices with 'correct' attitudinal qualities and the latter with labour relations and welfare. Thereafter, management specialists tend to see labour as a fairly passive factor in the accumulation process. Industrial Engineering and Resource Management view labour as a technical variable to be allocated according to the self-evident needs of fixed capital and the job-in-hand. Labour is more fully objectified by Finance and Marketing professionals, who are more completely divorced from the immediate demands of productive activity than either the technical planners or supervisors of labour power.

Management, then, is centrally concerned with controlling labour. However, labour control functions in British industry have been traditionally accorded low status behind more

technicist functions. At Rosyth labour was accorded a greater role as an active subject than at GEC. In the first four years of the term contract, management strategy at Rosyth began from seeing labour as an active subject from which all other considerations derived. Babcock entered a heavily-organised workforce with a reputation for militant action. Labour control and consent thus became the single key function in management strategy. An industrial relations specialist, highly rated by trade union officials, was drafted in with an independent remit to create a new labour relations climate in the dockyard. In the early years of the tender contract, indeed right up until the industrial relations specialist died unexpectedly, industrial relations were given the highest priority, eclipsing engineering and finance functions. But the new set of objective conditions in the sector after 1991, the demise of the position of power and influence of the personnel specialist and the sectoral exemplar established by rivals DML, shifted socialised labour control considerations to the fetishised form of stricter cost and efficiency criteria as the accountancy paradigm became ascendant.

Yet this was not so much a strategic shift in management thinking but a reaction to crisis. Prompted by crisis a new hegemonic vision of the contradiction between capital and labour, with labour increasingly assigned the status of an inert, passive object, was generated through conflict and competition within management. The elaborate and well resourced Industrial Relations Department, so carefully built during the phase of labour control hegemony, was gradually dismantled and the remnants filed into the Human Resource Department. Those specialisms closest to concrete labour, particularly supervisory and middle ranking production grades, began to feel undervalued and neglected, if still rewarded adequately, as the professional interests and world views of finance and technicist specialisms forged ahead. Instead of operating as a seamless unity management tended to pull apart.

A state capital labour process

In keeping with the conventional separation of state and economy, labour process and industrial relations theorists identify a qualitatively distinct state labour process from that of private capitals (Batstone et al, 1984; Ferner, 1988; Fairbrother, 1989; 1994; 1996). Where living labour can neither be disciplined by exposure to 'market' forces nor dominated by technology in the production process, social capital needs to generate its active consent. For capitals where valorisation was only a relatively weak imperative, as in the Cold War arms industry, socialised capital based upon co-operation with labour weighed more heavily than the domination by capital of simple, commodified labour. Internally, the state acted as a

'model employer' to win worker consent. Here, however, the contradiction between abstract and concrete labour, between market exchange and socialised use, took a sharp form. As *state* workers identification with a 'service ethos' of loyalty to a state employer was encouraged. The 'service ethos' turned on the view that the state employer acted impartially and fairly for the public good and was committed to uniform and standard employment relations. Yet, as *waged* state workers employees were subject to control by centralised, hierarchical forms of management.

Labour control strategies of Babcock and GEC are thus rooted in the historical evolution of Ferranti and the dockyards within the state capital complex. What Burawoy (1979: 109-120) called an 'internal state'[6] attempted to absorb and flatten out quantitative and qualitative uncertainties of the external market in labour and regularise the internal labour process. For Burawoy (1979: 198), 'the internal state and the internal labour market imposed constraints on managerial discretion, institutionalized the granting of concessions ...; constituted workers as industrial citizens with rights and obligations; and fostered competition, individualism, and mobility'. Moreover, the institutions of the 'internal state', departments of Personnel, Industrial Relations and Welfare, became, over time, disentangled from the managerial prerogative over the labour process.

'Industrial citizenship' has some direct relevance to Rosyth and Ferranti. The dockyard 'establishment' system pioneered an early form of the internal state for male workers through the 'competitive individualism' of the promotion system, welfare services, even extending to housing for Rosyth workers and funding relocation costs. Traditional forms of naval command and autocratic management in the dockyards gave way reluctantly in the 1940s to full trade union recognition and Whitley forms of institutionalised bargaining and procedures. Even here, however, wartime experiments in industrial participation at Rosyth were opposed by management. By the 1950s, functional management developed a specialised Personnel function and broke the overseer mentality of discipline-based Superintendents. Similarly, as Ferranti expanded after World War One a delegated system for personnel policies evolved out

[6] The term 'internal state' was developed by Burawoy (1979:110) to refer to 'the set of institutions that organize, transform or repress struggles over relations of production at the level of the enterprise'. As such, the analogy with the nation-state is imprecise. For example, citizens of nation-states are not nearly as mobile between states as labour is between, and even outside, individual capitals. Neither do industrial citizens exert democratic control over office-holders of firms. Burawoy

of the pre-war direct personal control regime. From taking an intransigent stance during the 1897 engineers' lock-out, Sebastian de Ferranti retained a personal antipathy towards trade unions and anything smacking of 'socialism', such as employer paternalism and collective bargaining.[7] Nonetheless, functional specialisation moderated the 'fierce individualism' of the Ferranti family. A family friend of the Ferrantis, Olivia Forbes, was appointed in 1915 as 'Lady Supervisor' for the welfare of unskilled female workers, a Welfare Department was established in 1917, and a Works Manager appointed in 1925 to deal with labour relations (Wilson, 1988: 153). Even more than at Rosyth, the separation of the personnel function was made subordinate to scientific-technical functions. Edinburgh's geographical distance from the main centre of Ferranti operations made it exempt from the centralisation of administrative functions at Manchester (Wilson, 1980: 334-5).

Ferranti and the dockyards tended towards what Burawoy (1985) calls a more 'hegemonic regime'.[8] More authoritarian forms of managerialism were replaced with Whitley-based procedures and joint committees, union recognition and stable bargaining, checking arbitrary, personalised management sanctions. An internal legal code set down rights and responsibilities around the notion of 'industrial service', with promotion, holidays, pension, sickness, and rights accruing over time and equality before the internal legality and 'industrial judiciary' of

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also tends to equate the 'internal' state to the expanded welfare states based on social citizenship of liberal democracies when this is only one form the state can take.

[7] Sebastian de Ferranti complained that the setting up of a Works Committee in 1917 to improve communications between management and the rapidly expanding workforce was a waste of working time. And, in response to labour militancy during the war, Ferranti stated, 'I look upon the labour position as the most serious as if we win the present war we have a worse enemy to fight in the shape of a misled lower class who want to nationalise everything and tax people who have or are capable of making anything out of existence', (in Wilson, 1988: 152). The dislike of paternalism by Ferranti among Manchester's employers is ironic given the reputation that Ferranti in Edinburgh would acquire in the 1950s and 1960s for paternalist practices.

[8] Burawoy (1985) identifies two basic types of control organised by 'factory regimes'. The first, 'market despotic' follows closely Marx's observations on unregulated nineteenth century factory life. 'Anarchy in the market leads to despotism in production', where workers are helpless against the arbitrary rule of a management itself driven blindly by fierce competitive markets (1985: 89). The other regime type, 'hegemonic', occur where state regulation of the effort bargain erodes managerial sovereignty, with worker consent being generated externally, by the institutions of civil society and the state, and, crucially for Burawoy (1979), within production itself. Labour may be granted control *in* production but never *over* production. 'Despotic' and 'hegemonic' regimes are rarely present in pure form. Burawoy identifies a more recent synthesis, 'hegemonic despotism', arising from the threat of firm relocation within the new international division of labour, labour's declining power to resist management demands for rationalisation, technical change and work intensification resulting in trade-offs in employment relations. For Burawoy, however, the precise combination of hegemony and despotism always seems to secure surplus value for capital, with even labour resistance, in the form of 'making out', incorporating workers still further (Clawson and Fantasia, 1983).

grievance and disciplinary procedures.[9] In both workplaces 'paternalism' was the shorthand used to describe the hegemonic system of industrial citizenship.

The 'internal state' is not, therefore, simply a functional expression of tendencies immanent in the unfolding structural logic of (state/monopoly) capital, as Burawoy tends to assume (Gartman, 1983). It is closely related to neutralising worker discontent and containing class struggle within safe limits. Nevertheless, the hegemonic struggle by capital to obscure relations of exploitation has contradictory effects for securing surplus value. With labour no longer subject to the absolutes of authoritarian management power, as a solution to the problem of variable labour power it is doomed to failure. Each stylistic solution of management contains other, emergent obstacles. The internal state, as an impartial arbiter, subjected management to a formal social contract. Control through standardised employment relations, centrally determined rules and regulations, and paternal welfarism, also 'controlled the controllers', supervisors and managers, as well as workers. The soft underbelly of standardised employment relations, relatively generous benefit packages, guaranteed job continuity implicit in the service ethos, and a fairly relaxed labour process, inhibited managerial authority to raise labour productivity and constrained any direct use of coercive sanctions to impose its will. At Ferranti, the dominant technical-administrative paradigm simply assumed that scientific-technical labour would be self-directed anyway. Restructuring aims to break through the blockages to productive efficiency that are created wherever a dependent management becomes beholden to living, social labour. The tension contained in management dependency on and autonomy from living labour points to a further contradiction within the capital-labour relation.

Escaping and controlling living labour

Unable to eliminate this dependency, capital is simultaneously repelled and attracted to living labour. This creates a material tension between labour redundancy and enrollment. Contemporary restructuring marks a stage at which living labour is expelled, displaced,

[9] Here the analogy with wider state citizenship has a further usefulness. TH Marshall's (1950) classic reformist essay on social citizenship was explicit about ameliorating class struggle. Whitleyism attempted a similar exercise, at the more concrete level of employer sovereignty. Industrial citizens acquired certain social, civil and political rights so long as centralised industrial rule was accepted, conflict was expressed institutionally, and that formal equalities did not extend to the overall control and purpose of industrial organisation. Institutionalising class conflict, internal labour markets and indulgent employment practices, socialised labour controls in a partly de-commodified field of

substituted, stored and objectified as 'dead' labour in greater quantities than it is when consumed as sentient, embodied, proximate, indeterminate and refractory. The former relies on a social division of labour, premised upon *exchange* between capitals, while the latter marks a technical division of labour, founded upon *use* within a particular production process. The latter, technical division, presupposes capital-widening by positing centralising processes, which diminish the external authority of exchange relations. The former, social division, presupposes capital-narrowing or deepening, positing de-centralising processes, which diminish internal control over production.[10] A decision to buy-in a finished product from a supplier means acquiring 'dead' labour, past work which has previously been performed and stored in commodity form, made possible by an existing external, impersonal social division of labour of independent producers. Acquiring use values through a social division of labour carries necessary circulation expenses associated with contracts, incomplete knowledge and transportation. A decision to make an article in-house means managing an internal, detailed division of labour of proximate, living social labour, future work which has yet to be accomplished. Within the differentiated unity of the state capital arms complex, such choices for individual capitals rest on relative preferences for managing or avoiding living labour, through either internal control or external displacement strategies.

The balance between the social and technical division of labour thus represents contradictory choices for states and capitals. Either relinquish direct control over the production process and pass on the task and risk of productive efficiency to some other capital. Or, alternatively, absorb the expense and risks of retaining control of production and autonomy to fit labour to the desired work organisation. In electing for an external displacement strategy, overhead and control costs may be minimised. On the other hand, internal control permits variability in the productive consumption of labour. Cost criteria alone are therefore insufficient for explaining the contours of socially divided, collective labour. In particular, transaction cost analysis

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struggle, attempted to address the problem of scarcity of certain kinds of labour; at Ferranti and Rosyth labour recruitment and labour retention was a recurring problem, as we have seen.

[10] Marx pointed to three essential distinctions. First, commodity exchange connected the various activities of independent producers, while the diverse labours of individual detail workers do not produce a commodity. Secondly, while the division of labour disperses the means of production under many independent commodity producers, the technical division of labour concentrates production under a single capital. Thirdly, independent commodity producers are subject only to the pressure of competition, interdependent detail workers are subject to co-operation under the sole authority of the capitalist employer. Marx mocks the bourgeois ideology which celebrates and defends the anarchy of the social division of labour against regulation and planning but, the same

(Williamson, 1985), where the firm is seen as analogous to the market, is seriously deficient as a guide to actual practices. Rooted in crude neo-classical assumptions, it fails to account for social and political bargaining in enforcing and maintaining relations within firms and industrial complexes. Specifically, the firm is not simply a minimiser of transaction costs. Primarily, it is an ensemble of social relations whose existence is a social and political accomplishment. As the rational kernel of institutional approaches acknowledges, albeit one-sidedly, firms internally suppress market uncertainties, creating and maintaining durable structures, embedding skills and knowledge in routines, and nurturing technological development and innovation. Contractual ambiguities, on the other hand, result in a constant material tension between use and exchange value. Written 'market' contracts, including employment contracts, are always incomplete and dependent upon extra-contractual, tacit understandings and relationships built up over time. Scope exists for contesting and renegotiating their terms (Baldamus, 1961; O'Connell Davidson, 1990; 1993). Moreover, the relative preference between market or hierarchical relations depends contingently on the character of the particular firm and industrial complex, such as the relative power of labour and capital, the state of demand, product and process evolution, strategy and organisational structure, as well as the wider political economy, including unemployment levels, legal frameworks, policy processes, and so on.

A key outcome of the restructuring process has been to shift the emphasis from managing an internal detail division of labour to market exchange through the social division of labour. The first stage, as we have seen, was to effect a more complete separation of the public and the private within terms of the state capital complex. This meant state divestment of control over living labour, pushing technological, political and financial uncertainties onto private capital. The reshaping of organisational boundaries of, now private, capitals was further inhibited, however, by a contractual obligation to use MOD test equipment, stores and supplies and MOD-nominated 'maker's labour' for assembling, integrating and servicing sub-systems. So although monetary values were exchanged, the dockyard and Ferranti remained locked into a technical-administrative complex of industrial organisation. Crucially, the redrawing of firm/client boundaries institutionalised socio-political bargaining. The formal and informal socio-political bargaining over license fees, work content and remuneration before, during and after work enters the firm, assumed a regularised basis, incurring considerable costs

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capitalists claim, would condemn society to an immense factory-like existence, similar to the

associated with recording, accounting, reporting and negotiating, on both the customer and producer sides. In these ways, externalising activities formerly performed in-house may in fact increase costs within the complex.

This verisimilitude quality of marketised exchange formalises arbitrarily constructed pricing regimes. In the early years of dockyard contractorisation, the MOD continued to draw up detailed work specifications as an aid to cost the actual price of work more precisely. By the early 1990s, with escalating cost and time investment in this practice due to the emergent and ambiguous character of work definition in refitting, it was abandoned. Instead, more loosely defined contract specifications relied on firm-specific expertise to execute work packages, guided by the arbitrary setting of payment milestones to mark the 'efficient' progress of work. At Rosyth, the customer organisation attempted to exert monopsony customer power but was, nevertheless, compelled to guarantee the contractor sufficient profitability over the first term contract to remain in the sector. Babcock, for example, was compensated for cancelled refits and the MOD underwrote redundancy programmes. The contractor, tied to specific contractual obligations for levels of naval workload, competitive contracts and diversification, attempted to balance this with satisfying shareholder interest in profit-maximisation. Attempts by the state to shift the balance within the complex to a market-based social division of labour were therefore limited by the lack of alternative suppliers, the formalisation of social and political bargaining and, crucially, strategic dependencies on securing certain combinations of firm-specific labour. Within the firm, the ascendancy of the accountancy paradigm ultimately depended on a marketised fiction. Resources are still centrally allocated through bureaucratic mechanisms. Only the very faintest whisper of 'market' signals internal to the firm can be heard.

The use of the social division of labour to re-commodify the state capital nexus has been a blunt instrument. Wielded opportunistically, vertical disintegration disassembles the detail division of labour and increasingly pushes living labour out of the charmed, inner circle of strategic capitals. Four methods of expelling living labour are available: internally, within the technical division of labour, capital substitution and functional flexibility; externally, buying-in labour and material goods when required as marketed commodities. The choice is a relative one between internal control or external displacement. Managing the refractory material of

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despotic technical division of labour organised in their own factories. (Marx, 1976; Beamish, 1992).

living labour is displaced externally, outside of firm boundaries and onto sub-contractors and component suppliers. Some functions, such as the capabilities of the dockyard foundry or Ferranti's Printed Circuit Board section, were scrapped altogether, with materials bought in from 'the market' as required. Labour is therefore already 'dead', so to speak, when it arrives through the gates, tied-up in a product available for exchange. Other internal capabilities, like machine shops, were rundown in both cases, albeit with some residual capacity retained. Local engineering workshops possessed manufacturing capabilities for the batch production of components, satisfying stringent MOD quality-assured specifications. For these supposedly more generic products and processes, internal extra capacity, retained for sudden surges in demand, like the Falklands or Gulf wars, is surrendered to the vicissitudes of contractual arrangements and market exchange. Internal tautness in labour supply and capital-narrowing are premised upon low expectations and a refusal to bear the cost or discipline-weakening effects of present labour 'idleness'.

More specialised capabilities, less readily available for short-term exchange, are more fully retained. Supplies of heterogeneous kinds of labour, with highly-specific knowledge and skills, 'specialised versatility', are not left to be determined by an external 'market' in labour, goods or services. Instead, internal controls are pursued. Here, attempts to expel living labour from the production process occurs through technical substitution and functional flexibility. At Ferranti, as Chapter 9 described, electronically-integrated design-to-production systems were designed to proletarianise white-collar labour, but this continued to be mediated by labour versatility. Shiprefititting, by its nature, allows of little scope for capital substitution. Production and support functions at Rosyth were vulnerable to electronic controls, with, for example, bar-coded work packages of SFCS eliminating labour-intensive recording by white collar staff of manual worker's job allocation and time. Technical substitution and market exchange have had a limited impact on the nature of the labour process. Restructuring has placed a premium on functional 'flexibilities' of living labour, shaped by the apparently determining technical contours of the work programme. Marx (1976: 617) argued that the constant revolutionising of the technical basis of production necessitated 'variation of labour, fluidity of function and mobility of the worker in all directions'. In its capitalist form, however, the positive, life-affirming aspect of varied productive activity is constantly threatened by the negative, disruptive aspect of labour redundancy, by suppressing specialisation and removing labour from the instruments of production. It will be argued more fully in the following chapter that functional flexibility, rather than producing highly skilled, well trained labour, is

little more than an opportunistic tactic to intensify labour effort through task enlargement, for example, by adding general labouring duties, sweeping, painting, scrap disposal, and so on, onto craft workers' existing tasks.

Collective labour was reconstituted so that workers with high 'asset specificity', that is firm-specific skills and knowledge, were retained internally while those with low specificity were expelled to the vagaries of the external labour market. Prior to restructuring, the priority given to minimising the length of time ships spent undergoing refit in the dockyards, the physical confines of ship refitting and craft job controls led to the extensive use of a three shift system and overtime. As part of a dockyard moral economy of long hours, low basic pay and a subdued work effort, working-time was prolonged. To improve earnings dockyard workers worked evenings, night, mornings and weekends. A tacit pact existed between management and the workforce in striking an effort-bargain, in the light of low pay offset by working long and unsociable hours, that so long as some mutually acceptable quantity of work could be seen to have been carried out everybody benefitted. Babcock attempted to intensify working time by undermining the dockyard moral economy. By simplifying the wage structure, improving basic rates of pay and curtailing overtime it was hoped that the conditions would be created for a fuller use of the working day, the adoption of more efficient work methods and accurate management recording and accounting for time. Afloat work was reorganized into multi-disciplinary teams under generalist supervision, covering a specified zone, rather than traditional, discipline-specific gangs under trade-specific supervision. Management hoped that the team rather than the trade would become the new source of workplace identities, with rudimentary ways of doing acquired from different disciplines. Zone management would seal-up both formal and informal time porosities of social labour by drastically reducing official waiting time created by work discontinuities and trade demarcations and idle, socialised time leakages.

A similar process occurred in even more drastic form at Ferranti, where a concerted effort was made to substitute capital for living labour. Labour was to be employed more intensively and extensively to block-up socialised leakages in the working day and de-skill technical labour. For both craft workers at Rosyth and technical workers at Ferranti labour versatility was demanded in the limiting form of task enlargement. But this also co-existed alongside a dependency on existing specialised versatility acquired from years of training, education, learning-by-doing firm-, process- and product-specific knowledge (Smith, 1987). Technical

workers by training were assumed to be self-directed, due to creative and challenging work where technical skills and knowledge could be put to good use. As one Ferranti engineer said, 'I have found that good responsible engineers do not need guidance, except on general policy, and this is the main reason to try and get them wherever and whenever they can be located' (MK Taylor, 1974: 6, cited by Wilson, 1980: 361). A GEC-Marconi Personnel Manager at Edinburgh, in recruiting 'quality engineers' for the Eurofighter project, promised that,

> The jobs offer good rewards and long-term prospects in a very sound business in one of Europe's finest cities. There is scope for engineers to switch to other programmes to suit their long-term development in GEC-Marconi. They will move between projects as demand for their skills arises. It's unlikely they will be working only on the Eurofighter contract' (in Lochead, 1997; see also Shennan and Lochead, 1997).

This is a clear statement on the continuing need for technical labour's specialised versatility. The self-development of technical labour and the internal control over their allocation between projects are assumed to be co-terminus.

Labour redundancy, through the expulsion of living labour, stands in constant tension with labour enrollment in the service of productive activity. Work was performed through an interdependent, graduated, heterogeneous labour process where the spatial separation between various kinds of labour was overcome infrastructurally through communication and coordination networks, such as regular bus services between work sites. Previously dispersed 'thin agglomerations of labour' were to be thickened-up by internally concentrating smaller amounts of labour together in close proximity and, externally, through the social division of labour and market exchange. External 'buffeting waves' of market relations were to be transplanted within the firm as the most effective mechanism to generate productive efficiency. However, it is important to qualify the extent of this. There has indeed been a marked shift in *emphasis* but this has had uneven effects, with identifiable continuities preserved to meet immediate exigencies and the lingering effects of past practices and ideologies. The combination of versatile and dead labour is therefore reconstituted expediently to minimise that refractory part which can never be finally expelled.

Two additional examples

Capital narrowing and labour expulsion at Ferranti and Rosyth were not the only options available to capitals in the complex. Two examples of defence firms in Scotland will indicate

variety in the different forms of restructuring work organisation. In extreme cases, some firms took up a capital-deepening strategy, deciding to abandon their collection of aging or obsolete capital stock and physically re-build the labour process anew from first principles. In Scotland, the military electro-optronics firm Pilkington Optronics, formerly Barr and Stroud, has been celebrated as an exemplary case of 'business process re-engineering' and 'Computer Integrated Manufacture'. Pilkington moved from a sprawling cluster of inter-connected factories to a sparkling, custom-built factory on the River Clyde (IRRS, 1993). Pilkington simultaneously attempted to escape from living labour through redundancy and investment in greater levels of technical control. At the same time, management also wanted to engage what was left of the beleaguered workforce as high-skill, creative, problem-solving teams. Functional specialisation was to be replaced by a product-based cellular production process around highly specialised assembly work. Contradictions contained in the company's belief in a decisive technical-organisational solution to an 'inefficient' labour process soon became apparent. Attempts were made to construct company identities to supplant occupational identities. But this was done in hostile conditions of rising levels of work intensification and mass redundancy. Between 1990 and 1993 the workforce was cut from 2,500 to 750. Evidence from a similar case at DefCo (Blair, et al, 1997) indicates that despite the heavy investments demanded by re-engineering, the aim of building a culture of organisational commitment is contradicted by the demoralising impact of mass redundancy on the remaining workers.

More usually, weaker forms of restructuring attempt to rework existing capital. At GEC-Yarrow, for example, a more limited technical-organisational restructuring of the labour process, 'modularisation', was undertaken (Walker and McCluskey, 1996). The options for spatial mobility were not available to Yarrow. Instead, modularisation integrated design and build methodologies, from static forms of berth building to more spatially and temporally dynamic and flexible modular construction techniques and labour supply. Better work co-ordination reduced time porosities, required less labour and consumed less constant capital. 'The basic aims were, and remain, simple: the achievement of optimum productivity through effective design, planning and the movement of outfitting work to earlier, and inherently less costly, stages of build' (Walker and McCluskey, 1996: 125). Instead of physically moving labour to the workpiece, wherever feasible smaller, modular ship sections moved to labour. Labour time was thus saved by increasing work continuity and reducing fluctuating demands for various trades through greater use of workshops rather than the constrictive berth space,

increased unit assembly, which allowed many individual units to be built simultaneously and a reduction of post-launch outfitting from 80 to 20 per cent. Traditional build methods relied 'heavily on the experience and knowledge of the workforce to create a finished vessel' (ibid., 129) but now fully detailed work packages were designed to remove discretion from the workforce and eliminate piecemeal work. With composite, multi-discipline squads, under a single foreman for each work module, job demarcations apparently became 'a relic of the past'. All this was 'achieved with the full co-operation of the workforce, creating a good team spirit ...' (ibid., 130). Similar claims for flexible working and partnership were encountered for Rosyth but at Yarrow there seems perhaps even less grounds for accepting them. McKinlay and Taylor (1994) have documented the belligerent, macho management style of Managing Director, Murray Easton and the deep worker discontent at Yarrow, culminating in blue and white collar strikes.

Underlying restructured work organisation then were contradictory demands for worker commitment and worker redundancy. Both Pilkington and Yarrow's escapes from refractory, living labour through rationalisation were contradicted by the need to continually re-engage labour. Ferranti, under a GEC regime like Yarrow, dealt with living labour using a similar regime of aggressive 'macho-management'. Continued dependency on the specialised versatility of technical labour restricted the degree to which technical control was a viable alternative to enrolling workers hegemonically. At Rosyth a more consensual approach to living labour was struck. Babcock's 'soft' Human Resource strategy for ensuring labour control and productive continuities had much to do with the way in which Rosyth remained a strategic dockyard until 1991 and the recent record of worker militancy By the late 1990s, however, Babcock seemed set to emulate Yarrow, not only in the concept of zone management but in the whole tenor of labour relations. First, a redundancy programme is currently being prepared, with the relatively generous redundancy entitlements for the dockyard workforce being bought out in 1997, gradually reducing the financial burden of redundancy as the surface ship refit programme begins to taper-off. Second, the former Managing Director at GEC-Yarrow, Murray Easton, was recruited to manage Rosyth. Third, is Rosyth's waning strategic status was confirmed by the tapering-off of guaranteed work, with plans to establish a more competitive environment for surface ship refits (although not nuclear submarines). This adds up to an imminent change in the style of management. An early indication of the changing tempo came as the period covered by this study ended, with demands for a 'self-

financing' 2 per cent pay deal in 1997 pay negotiations, including 'bell-to-bell' working, the issue which sparked discontent at Yarrow (McKinlay and Taylor, 1994). As Easton sees it,

> In the past most of the negotiation was between the customer and the company. In the near future we will be competitively quoting for surface warship refit contracts as well as having to diversify. We have to change the way we do business at all levels and continue to strive for higher productivity and cost reduction. (*Dunfermline Press*, 1997)

Whether achieved through internal technical, hegemonic or despotic controls or external displacement strategies, 'higher productivity and cost reduction' are management euphemisms for labour redundancy. Reducing the dependency on living labour has now become an explicit objective in itself and not simply a temporary 'alignment' of labour to workload. However, this is contradicted by an array of internal controls for intensifying and extending the use of labour time, tightening the labour-capital relationship on a more narrow basis.

Conclusion

At both Ferranti and Rosyth there was a break materially and ideologically with embedded practices after 1991, through wage freezes, redundancies and attacks on company welfarism. Incoming 'outsiders' were the main sources of the new outlook. GEC and Babcock managers were on a mission to change indulgent practices of the past. Both had prior experiences of organisational change, at Babcock in the 1970s and early 1980s, and the continual re-organisations of GEC, as factories and divisions were sloughed off after merger or takeover. They were the main advocates and carriers of the ideology of change. Nevertheless, the complex landscape of historically-evolved workplace relations, product demand and profits, and management styles ensured that the form and tempo of restructuring differed in each case.

The implications of extensive accumulation prohibited the regulation of productive efficiency by 'market' mechanisms. 'Strategic' capitals restructured both detail and social divisions of labour as part of a changed balance between living and dead labour. Internally, living labour became subject to a re-organisation of work based on increased time continuities. Externally, greater use was made of outside agents, suppliers of components and intermediate goods and sub-contract labour. Even in cases of 'total solutions', where firms attempted to 're-engineer' the labour process completely, tensions between discharging and enrolling labour, between the socialisation of team working and the fragmentation of external displacement, between discipline and creative problem-solving, served to limit efficiency gains. Problems persisted

for individual capitals: of making concrete labour abstract, of making absolute surplus value relative, of making labour's formal subordination real. The question of subordinating living labour is the theme of the next chapter, specifically, the unique capacity of living labour to resist and comply with restructuring. If, as Hyman (1987) claims, restructuring implies that individual capitals set out on 'different routes to partial failure', locating labour's part in restructuring is an essential dimension for mapping the relative failure and self-contradictory character of the restructuring process.

Chapter 13

Dimensions of Restructuring III:

Worker Resistance

Chapters 11 and 12 argued that the restructuring process at both state and capital levels is fraught with tension. In particular, restructuring military industry poses a special set of problems for state capitals to mediate. Strategic firms within the state capital complex cannot simply turn concrete labours accumulated on an absolute basis into abstract labour accumulated relatively. Moreover, attempts to commodify the social relations of production in the arms economy can only ever be partially successful. By reducing the employment relation more starkly in exchange terms re-commodification threatens to negate the specialised versatility of residual workforces while redundancy strategies, on the other hand, create even greater management dependencies on smaller groups of key workers. As a solution to the efficiency dilemma of defence firms, partial vertical disintegration shifts the emphasis from the internal controls of capital-labour relations to a greater reliance on external ones through capital-capital relations. One sort of uncertainty, the indeterminacy of the employment relation, appears to be reduced only for other kinds, to do with diseconomies of scale and scope and external dependencies on suppliers of goods and services, to become more pronounced. In practice, however, even 'total' management solutions can never eliminate dependencies on living labour. Alongside external displacement strategies, internal 'flexibilities' have been touted as a mutually beneficial 'efficiency gain', although this often amounted to little more than building additional, generic tasks onto craft and technical labour's existing duties (see also Elger and Fairbrother, 1992). Allied to formal, collectively negotiated flexibility deals, internal enrollment strategies of Total Quality Management (TQM) for production and Human Resource Management (HRM) strategies for personnel attempted to less formally produce self-disciplined living labour. The uses, and abuses, of HRM in the case of Rosyth will be considered below.

The main argument of this chapter is to view the restructured capital-labour relation as being one founded on the contradiction between the forces and relations of production. Worker subordination to some pre-given technical requirement of the labour process which demands 'flexibility' may, or may not, be immanent to the 'logic' of accumulation. Yet, at least in the case of Rosyth, the slight and tentative nature of much heralded 'flexibilities' suggest avoidance of an open confrontation with labour and, at the same time, a preparedness by

labour to accept negotiated change which does not yet encroach on core capacities. Within the social relations of capitalist production human labour is simultaneously a creative force for and an obstacle to accumulation. In the interstices of the employment relation capacity exists for limiting the extent of real subordination. This, it will be proposed, can be understood substantively by developing perspectives from the heritage of classical Marxism.

Recent critiques of labour process theory (Salaman, 1986; Wilmott, 1997) detect in Marxism the reduction of human subjectivities to 'personifications of economic categories, the bearers of particular class-relations and interests' (Marx, 1976: 92). This is precisely what numerous critiques have argued that Braverman's (1974) seminal analysis of the capitalist labour process does (for rebuttals see Thompson, 1989; Meiksens, 1996). 'Subjectivities', however, are not simply constructed by discourse or ideology but are rooted in a structured material process. To account for worker identity, however, need not imply a narrow focus on the details of occupational change, deskilling and production techniques. Too often such narrowness wrenches the labour process from its rootedness in a wider political economy. A spurious and ahistorical technical neutrality of control in the labour process is identified as the locus of all other aspects of capitalist employment relations. Technical narrowness of this kind makes any wider restructuring or variability of employment relations difficult to understand.

As O'Connell Davidson (1993) argues, this ignores the sources and determinants of employment relations. Employment relations have a two-fold character. First, there is the terms of the sale of labour power, roughly based on a market definition of labour's exchange value. Second, there is the nature of the work tasks, a workplace definition based on labour's use value. Employment relations therefore constitute, 'the web of tacit and explicit bargains struck between a unit of capital and the labour it uses over a range of issues concerning what work is to be done and how, and what payments and benefits will be ceded in exchange' (O'Connell Davidson, 1993: 7). Against the widespread view that job content is the primary determinant of employment relations, O'Connell Davidson (1993: 19) argues that this fails to explain cases where either job content is maintained even as employment relations change or where job content changes while employment relations are maintained, 'the variability of employment relations does not stem primarily from skill, job content or features intrinsic to the production process, but has to be explained in relation to wider political, institutional and economic factors'. Clearly the rise of internal states in the 1940s at Ferranti and Rosyth

standardised employment practices in the context of a national labour/capital settlement. With the rise of the national welfare state market disciplines acting to subordinate labour as a commodity were ameliorated.[1] Within the workplace the internal state confirmed the formal separation of internal legal and social codes from the vicissitudes of the production process. Labour, in self-organising as a collectivity, begins to overcome atomisation and its corollary, latent destitution, weakening, although not abolishing, the disciplining impact of the commodity status of wage dependency.

Leaving aside the erroneous notion that Marx held to a radical form of structural-functionalism, a key concern of this chapter revolves around how Marxism might explain collective forms of resistance or account for its apparent absence. The classical Marxist focus on class struggle must presumably form part of a response to the charge of structural-functionalism. Just as capital takes a dual form, constant and variable, so also does labour: abstract and useful, or concrete, labour.[2] It is the second aspect, labour as useful labour, which has tended to be lost sight of. Understandably much work in the Marxist tradition has been preoccupied with labour as abstract labour. In neglecting useful labour 'in a particular form and with a definite aim' much research informed by a labour process perspective has focused on control and deskilling and less frequently at the dual nature of labour domination by capital. Here I want to make the dual nature of labour, as value and as utility, key to the study of compliance and resistance in the processes of state capital restructuring.

The idea of praxis holds out more of a prospect for a dialectical engagement with action and structure in the restructuring process than either the idealism of 'subjectivities' or one-sided production control logics of structuralism. Praxis refers to sensuous, creative activity and the ways in which human practice is comprehended. In a striking passage, Walter Benjamin (1970: 256) maintained that class struggle is always 'a fight for the crude and material

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[1] TH Marshall's (1951) classic case that the granting of 'social rights' would 'abate' class struggle thus proved mistaken. Instead, full employment, economic boom and the legitimation of organised labour partly de-commodified the employment relation but also strengthened workplace shop stewards' organisation, creating informal local centres of power to contest the terms of the employment contract and managerial prerogatives. The employers' response locally was a spate of productivity deals and nationally incomes policies were designed to stem wage 'drift' (Cliff, 1970).

[2] On the one hand, all labour is an expenditure of human labour power, in the physiological sense, and it is in this quality of being equal, or abstract, human labour that it forms the value of commodities. On the other hand, all labour is an expenditure of human labour power 'in a particular form and with a definite aim', and it is this quality of being definite useful labour that it produces use values.

things, without which no refined and spiritual things could exist'. In counterposing crude, material things to refined, spiritual things, Benjamin viewed the latter as a 'retroactive force' consisting of 'courage, humour, cunning and fortitude'. As the 'most inconspicuous of all transformations' such resistance may neither be immediately observable nor determined in advance by 'structural forces'. Every seizure of society's surplus product by a non-producing class is thus constantly put in jeopardy by the active resilience and wit of the dominated, what Benjamin called the 'secret heliotropism' of the historical process. Domination and dependency relations between the contending classes are therefore subject to a collective socio-psychology of resistance. Against the inexorable objective laws posed by crude mechanical materialism, Benjamin captures something of the irreducibly subjective character of social action. An adequate understanding of industrial change integrates praxis within an historically-informed political economy of restructuring.

The social organization of labour - subordination and resistance

Marx's (1973; 1976) distinction between the formal and real subordination of labour[3] is a useful starting point for understanding issues of labour resistance and compliance. On the one hand, the formal subordination of labour roughly corresponds to the market side of the employment contract and concerns the sovereign right of capital to appropriate the social product of labour through prior labour market contracts.[4] While this entitles capital to the legal consumption of labour power over a given period of time in return for a wage as yet no distinctively capitalist control of the labour process is implied. Absolute surplus value is generated by greater economy in the consumption of the means of labour, extending the length of the working day or intensifying it by reducing labour 'porosity', the 'petty pilfering of minutes' during 'idle time' where gaps in productive activity appear. Real subordination of labour, on the other hand, concerns the extent to which productivity increases to create relative surplus value. This is made possible by shortening socially necessary labour time in production through reorganising production into larger units around a more complex

[3] Marx uses the phrase 'subsumption of labour'. 'Subordination' is used here for consistency. The most systematic statement by Marx (1976: 1019-1038) is given in the 'missing' chapter or part 7 of Capital volume 1, the *Resultate*, ('Resultate des unmittelbarren Produktionsprozesses'; 'Results of the Immediate Process of Production').

[4] The typical example of purely formal subordination was the outworking system of domestic or cottage industry which relied on inherited practices of traditional labour processes but became tied to a system of merchant control, themselves under competitive pressure to accumulate greater stores of capital.

technical division of labour and the introduction of time-saving technologies.[5] Instead of simple co-operation and formal subordination, which only exceptionally and temporarily re-oganises the basis of production, real subordination places 'labour under foreign command and foreign supervision' (Marx, 1861-2, in Beamish, 1992: 76). Labour's use of the instruments of production thereafter is dependent on variations in capital's dissolution and reconstitution of combined dead and living labour. Formal subordination is extrinsic to the labour process while real subordination is intrinsic. Capitalist control of the labour process marks out its territory within 'the hidden abode' of production as the sole 'political' authority in the workplace, systematising the division of labour in society and in production. Capital consumes living labour obtained beforehand through market exchange by uniting it with the instruments of production. Living labour is thus subordinated by management both extensively and intensively in the labour process and its subjective will harnessed creatively to the overall goal of accumulation.

What implications does the real and formal distinction have for relations between superordinates and subordinates? Cressey and MacInnes (1980: 14) argue that this has directly contradictory consequences for capital and labour which 'represent the working out of the contradictions between the forces and the relations of production at the level of the workplace itself'. For capital, the necessity of dominating labour as a commodity comes up against the necessity of consuming labour through the co-operative socialisation of production to create surplus value; value is contradicted by use. Capital thus has 'an active interest in suppressing its own dominance in the workplace to the extent that dominance flows purely from the social form of the relations of production and not from the [technical] requirements of production itself' (Cressey and MacInnes, 1980: 15). In order for exploitation

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[5] While this has sometimes been taken to imply that real subordination can be equated with the grafting of machinery onto pre-existing industrial organization, with the relations of production collapsed into the forces of production (Cressey and MacInnes, 1980), Marx (1976: 1024; see also, Beamish, 1992: 127-8; Elger, 1979: 90-1, n11) stressed the ways in which real subordination took the form of the collective worker.

> The *social* productive forces of labour, or the productive forces of directly social, *socialised* (collective labour) come into being through co-operation, division of labour within the workshop, the use of machinery, and in general the transformation of the production by the conscious *use* of the sciences, of machines, chemistry, etc. for specific ends, technology etc., and similarly, through the enormous increase in *scale* corresponding to such developments.

to take place capital's domination must be (partly) sacrificed. Famously, control is shared the better to retain it. For labour's part, resistance is embedded in exchange relations against attempts to reduce it to a pure commodity. Yet this comes up against labour's use value which can only be actualised once access to the means of production has been granted and the instruments of labour subsequently taken hold of.[6] Labour thus has a contradictory interest in the development of the forces of production which is at the same time negated by exploitative relations of production.

Far from obeying some blind logic of total domination and control the capitalist labour process is a 'joint creation' fashioned through the collision and collaboration of contradictory interests, class struggle in other words.[7] Restructuring marks a point at which capital's repressed domination returns to refashion the joint creation in a more singular way.

This is not simply dead labour dominating living labour under conditions of total valorisation but the mutual conditioning of the forces and relations of production.

[6] However, labour's use of the instruments of production is always policed by an army of supervisors and overseers, which Cressey and MacInnes tend to ignore. This allows them to make labour's interest in the development of the forces of production arising from its use as equally significant as labour's interest in resisting exploitation arising from the relations of production. In fact it could just as easily be claimed that any interest labour has in the productive forces of a particular capital arises from its dependency on continually realising exchange value for its labour power. This is not the same as some immanent drive of labour utility to become increasingly productively efficient.

[7] Class struggle is broadly understood to be intrinsic to relations of exploitation in production. Because it is relational struggle is conducted by *both* capital and labour; it is not only present when labour resists. The equation of class struggle only with labour's resistance seems to be the implication of Callinicos' (1989: 51) rejection of de Ste. Croix' identification of exploitation with class struggle. Callinicos argues that,

> Exploitation does not take place automatically, and it will tend to evoke resistance, if only in such molecular forms as sabotage and ca' canny, but it does not follow we should therefore say that exploitation *is* class struggle. There may be some situations where the balance of forces is so favourable to the exploiters that surplus-extraction is a routine process and resistance minimal or non-existent. It would seem better to say that exploitation *explains* class struggle, where the latter consists in some actual conflict, even if the combatants lack class consciousness.

This seems to restrict class struggle one-sidedly to overt acts of resistance on the part of labour or coercion on the part of capital. If class relations are inherently antagonistic struggle, 'now hiddden, now seen', is a structural condition of exploitation. A false dichotomy between struggle and accomodation fails to grasp the dialectic of a two-sided process. Struggle at the point of production is always molecular, if by that is meant an ever-shifting but ever-present process of refractory activity, but which at a certain conjuncture goes through a qualitative transformation when action tends towards zero-sum solutions or decisive shifts in the relative degree of subordination for an extended duration. This is what distinguishes periods of downturn and upturn in labour and capital combativity. Periods of restructuring can therefore be characterised as an upturn in capital's willingness, for whatever reason, to risk upsetting the institutionalisation of class conflict, at a

The social organization of labour - organizational capacities

In order to move beyond formalist accounts of subordination a substantive theory of resistance can be developed around the idea of organizational capacities (Wright, 1978). An organizational capacities approach begins from the structures of asymmetrical power at the command of capital and labour within the relations of production. In their enabling form labour's structural capacities rest, as indicated in the discussion of subordination, upon the pervasive dependency of capital on collectivising concrete labours for purposeful activity. In their constraining form living labour remains dependent on individual sales of labour power. But this relation does not at all entail an even distribution of power and dependency. Capital can be sustained by one-dimensional, 'monological' organizational forms since its resources can be concentrated and stored in impersonal forms, stocks, commodities, money, fixed capital and its interests more readily understood without the same need for consciously organised dialogue.[8] Capital's sanction over labour is already centralised and concentrated. Offe and Wiesenthal (1980) argue that capital's prior dominance as a relatively unified social force, its unequal market and technical power over labour, and its privileged relationship to the state, reduce capital's activity to a seemingly overriding necessity of calculating costs and benefits. In short, accumulation is in unassailable command in self-organising capital.

However, the domestication and institutionalisation of organizational capacities can be represented too one-dimensionally. Clearly capital does not possess clearly-defined ends-means as unproblematically as Offe and Wiesenthal assume. Neither is it so disembodied as to function in a wholly unitary way. Capital is always relational, to other capitals, as market competitors and collaborators, to the state, and, of course, to collective labour itself whether organised for production in the labour process or for curbing management autonomy in the

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conjunctural moment designed, however opportunistically, to re-order the relations of exploitation on a more favourable basis to capital.

[8] As Alfred Marshall put it, 'labour is often sold under special disadvantages, arising from the closely connected group of facts that labour power is 'perishable', that the sellers of it are commonly poor and have no reserve fund, and that they cannot easily withhold it from the market' (cited by Hyman and Fryer, 1977: 154). Even James Prior as the Secretary of State for Employment in introducing the Employment Act of 1979 recognised the inherently unequal power relations of unorganised workers, 'The law should always give full recognition to the inherent weakness of the individual worker vis a vis his employer, to the need for him [sic] to be organised in a union and to the need for his union to have such exceptional liberties as may be necessary to redress the balance' (quoted by Wedderburn, 1989: 3). Lash and Urry (1984) put it, 'The power of capital exists without [dialogical] organisation, the power of labour only exists with organisation, but it is an organisation which is precariously balanced'.

form of trade unions. This, after all, is what the discussion of subordination and resistance is all about. The idea of organizational capacities is a way to move beyond both pessimistic and optimistic versions of economism, which posit automatic labour responses to the 'logic' of capital. In the context of the arms industry, where there is no rigid division between state and capital, a unilinear 'market pressure-adaptation of capital-response of labour' approach is woefully inadequate. An organisational capacities approach still requires, I think, retaining some sense of the unequal powers of capital and labour not as some absolute pre-determining law but as constantly in the process of development. Capital is ultimately compelled to confront labour in the 'contested terrain' of production (Edwards, 1979). And, whether consciously or not, workers are compelled to both resist and to co-operate in different measure. Edwards (1986) calls this the 'structured antagonism',[9] although this can be put more strongly where the dual market/production relations of subordination is seen to rest on structural contradictions.

Contradictory capacities and interests notwithstanding, the 'logic' of workers' self-organization differs markedly from capital's. In contrast to capital's self-organizational capacities labour is always embodied, always a personal capacity of individual workers. As Marx (in Draper, 1978: 99-100) put it,

> Capital is concentrated social force, while the workman has only to dispose of his working force [labour power]. The *contract* can therefore never be struck on equitable terms, equitable even in the sense of a society which places the ownership of the material means of life and labour on one side and the vital productive energies on the opposite side. The only social power of the workmen is their number. The force of numbers, however, is broken by disunion. The disunion of the workmen is created and perpetuated by their *unavoidable competition among themselves*.

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[9] Edwards (1986), in seeking to avoid teleological processes and iron laws, culminating in a revolutionary transformation of capitalism, severs the structural antagonism from 'interests'. This echoes Therborn's (1980: 5) objection that 'interests' are 'an utilitarian residue in Marxism'. Callinicos (1989) answers this by invoking the idea of structural capacities to connect interests to wants. Agents wants are constituted by their capacity to realise underlying wants through powers, latent and manifest, in the relations of production, broadly understood. Instead of universal wants the concept of social need might offer a better non-utilitarian link to interests. Here labour, in common with the dispossessed, clearly has an interest in challenging the commodification of meeting social needs. Only labour possesses the structural capacity to pose a revolutionary challenge to capitalism. This need not imply that structural capacities will be exercised. For that organisational capacities, unions and political parties, are required.

Workers may be collectivised by capital within the labour process but individual employment contracts and the detailed division of labour counteracts labour unification and cohesion.[10] Edwards (1979), for example, argues that disunion between workers grew further as the size of the firm grew in the twentieth century. A dual system of job and wage hierarchies and bureaucratic control over the labour process was designed to assuage and prevent labour forming itself as an active collectivity by competitively fragmenting the workforce with a corresponding unequal distribution of rewards. Clearly, at one level, this model fits the historical development of dockyard management from the eighteenth century down to the 1970s. Yet, like Burawoy's 'factory regimes', such schematism is profoundly ahistorical since it fails to locate class capacities as relational, processual, contradictory and liable to change. Dockyard management were faced with contradictory choices in subordinating labour. As some of the largest, most concentrated industrial organizations of the eighteenth and nineteenth century, the naval dockyards relied largely on a formal subordination. The labour process was left under independent craft control, above all in the hands of the dockyard shipwright.[11] But even under naval command dockyard labour was subject to repeated stratagems to make work more intense.

Insofar as labour atomisation is overcome as a source of weakness it is achieved through self-organization into an independent, concentrated counter-force. Offe and Wiesenthal (1980) argue that labour can only counteract the domination of capital *organisationally* through what they call a 'dialogical' form of associative collective identity and action. The basic sanction of workers' organization is the embodied possession and collective control of labour power and the basic organisational form is the trade union. The effectiveness of labour's sanction over capital depends upon unions finding appropriate forms for institutionalising and representing membership ideology and activity. In this sense, collective agency made its

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[10] Anderson (1967: 265, 268) thus goes too far in identifying trade union control over labour power as 'a singularly rigid and limited power' because of its initial rootedness in the 'natural organisation of capitalism itself - the labour market', claiming that 'Trade unions, then, take on the *natural* hue of the closed, capital-dominated environment of the factory itself. They are a passive reflection of the organization of the workforce'. Trade union organizational capacities may indeed be limited but these cannot be read off directly from capital's organization of the workforce, except in a broad brush way, before empirical investigation. To do so denies the process of organization in the workplace its three-fold dynamic, between labour, unions and employers, within distinct relationships to the means of production, and conflates the market basis of the employment relation with its useful productive side, within 'the environment of the factory'.

presence felt at both Rosyth and Ferranti, modifying and moderating management practices in the decades before restructuring and conditioning the scope and tempo in various ways during the restructuring process.

An example from Rosyth during the anti-privatization campaign highlights something of the difference of capital and labour organization. In 1985 manual unions at Rosyth blacked remedial work coming into Rosyth which had been done previously by private repair yards. Members of the engineering union, AUEW, refused a management instruction to repair the propeller of *HMS Redpole* which had previously been repaired at a private shiprepair yard. Each individual worker was verbally instructed by management to report to the ship or face suspension following a one hour 'cooling-off' period. Despite the individualised nature of the order and the threatened use of suspension not a single one of the 800 members of the AUEW reported for duty at the ship until a compromise was reached days later. Clearly, at each level a unitary management implemented a standard order across the breadth of the dockyard. The difference was that management exercised vertical hierarchical authority through a small number of agents while eight hundred union members shared a horizontal obligation to act on the principle of opposing incipient privatization. That each individual union member identified themselves as part of a labour collectivity rather than being bound by management's sovereign right to consume labour power as it saw fit was a social and political accomplishment of the dialogical structures of representative shop stewards' organization. Within the workplace shop stewards built and maintained opposition to privatisation by working with and redefining pre-existing membership material interests, identities and ideologies. For the dockyard management, whose right to manage was embedded in the bureaucratic procedures and rules of the MOD Manuals, implementing policies designed as part of the privatization process badly undermined their traditional claim to the technical neutrality of the labour process. In this politically contested environment shop stewards worked for a dialogical form of association and proved more successful at appealing for the allegiance of dockyard workers' interests against the hierarchical authority of management.

Where latent structural capacities take manifest organisational forms they do so within a particular constellation of conditions. Four seem particularly important: work, labour,

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11 Even as the dockyards began to build steel ships, shipwrights managed to maintain their traditional dominance and status by acquiring the right to work in metal, which was done by boilermakers in smaller private shipyards.

institutionalisation and effort values. First, the social organization of work includes firm, workplace and workgroup size, scale and location, and the technical and social divisions of labour. Second, the social organization of labour, which includes shared traditions, history and ideology. Third, the social organization of the capital/labour relation and their relative institutionalisation. And finally, what might be called, following Thompson (1971; 1993) and Baldamus (1961) a 'moral economy of effort'. These are not fixed as eternal verities but are variable and changeable in different contexts. Such contexts include the wider legal framework and political economy, product sector conditions, technical change, ownership forms and management strategy.

The voluntary, horizontal nature of labour organization and its dependence on members who must acquire access to the production process in the first place gives it a precarious existence. Organizational vulnerability can be masked during stable, institutionalised phases of extensive accumulation, such as happened during the dogdays of the permanent arms economy. In conditions of industrial citizenship, bureaucratised and centralised bargaining, orderly and uninterrupted relations of production, and the stress on the quantitative dimensions of organization, above all increasing dues-paying membership numbers, labour organization possessed the semblance of a fixed (and fair) share of power in determining the form of the employment relation. 'Representation' becomes dissociated from collective action, implied or actual. Threats of disruption and the qualitative dimension of oppositional associative collective identity and activity were disavowed. Thus, 'the distinctive logic of working-class collectivism atrophies, and union organization, losing its power base in (potential) membership mobilisation, becomes increasingly dependent on the support and goodwill of those external agencies it was created to combat' (Hyman, 1989: 114). At both Rosyth and Ferranti during the 1950s and 1960s institutionalised bargaining provided a similar stress on quantitative, collaborative relations and dependencies. In changed conditions, trade unions appear even more dependent on external agencies for reaching a modus vivendi with a hostile employer or, as in the 1980s and 1990s, hostile governments.[12]

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[12] Brenner (1985: 47) describes similar processes affecting labour organisation in the US as the classic paradox of reformism.

> ... although union officialdom may rise to great heights during the boom on the basis of its ability to secure labor peace and the apparent well-being of workers, it does so at the expense of the workers' self-organization and thus of its own power and position in the long term. As the expansion gives way to contraction, the officials are less and less able to make collective bargaining work for their constituencies or themselves: the employers break

In Scotland, these external agencies include a national institutional framework, 'the Scottish lobby', which the labour movement, locally and nationally, through the STUC and the Labour Party, is plugged into alongside business and sub-state agencies. Both at Rosyth, especially during the Trident competition, and, more regularly, at Ferranti trade unionists turn to this external crutch for legitimacy and support, just as they also gravitate towards the agencies of the British state at moments of perceived danger.

Politically, however, labour in the arms industry has had an ambiguous relationship to the wider labour movement. Once the initial wartime fervour dimmed and disarmament was taken up by sections of the labour movement in the late 1950s a mutual suspicion, if not hostility, existed. Workers in the arms industry were often viewed by 'progressives' and peace activists as morally tainted and politically unreliable, bought off by easy comforts and complicit in the state's relentless drive for armaments. Partly, this was to do with suspected 'feather-bedding' and nepotism, the greater job security and benefit packages which helped foster an inward-looking mentality and the ways in which internal labour 'markets' based on seniority opened up promotional prospects on an individualised basis. As indicated above, management in core arms firms were subject to the claims of industrial citizenship. Civil rights carried over into equal employment rights, at least for male workers, in the form of standardised contracts and constitutional entitlements for industrial civil servants, enshrined, for example, in intricate detail in the voluminous MOD Manuals. Within Ferranti and Rosyth in the 1950s and 1960s, union demands were indeed satisfied internally through constitutional channels and external institutions, such as the STUC, were seen as having little immediate relevance. Indeed as the antipathy towards arms producers resurfaced with the onset of the Cold War and demands for unilateral nuclear disarmament became widely supported within the labour movement, jobs and conditions in such workplaces seemed to be threatened.

However such accounts leave out of the picture political and ideological struggles within Rosyth and Ferranti. Following the more famous Lucas example (Wainwright and Elliot, 1982), in both workplaces demands were made for reducing the dependency on arms

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> the deal and unleash their offensive; the workers see fewer reasons to support either the officials or their reformist strategies; the officials watch their organizations erode and their whole world view lose its credibility'.

There is no need to share Brenner's apocalyptic vision to agree that this paradox is at the heart of reformism.

production through diversification and conversion. These tended to coincide with moments of crisis, at Rosyth in the early 1980s when uncertainty was created by dockyard reviews and disarmament politics, and at Ferranti during the final years of the Cold War, the ISC crisis and the GEC takeover. A rapprochement between dockyard unions and the STUC became possible, when the danger became represented as a national-populist one to Scottish jobs and industry, first over commercial management in the mid-1980s and, in the early 1990s, around the Trident contract. At Ferranti the official union position was one of retaining sufficient industrial capacity from which to ultimately diversify. Paradoxically, this meant practical support for lobbying for arms contracts like Eurofighter coming to Edinburgh in the short-term and, in the longer term, hopefully leading to the setting-up of a funded diversification programme under a Labour government (Hardie, 1992). A class-based 'politics of state' invariably gave way to a pragmatic local 'politics of production'. Only very rarely were these fused, such as collective action by TGWU shop stewards at Rosyth to black parts for a Chilean submarine in the 1970s.

But in the 1970s the settlement began to break down, first at Rosyth with the 1972 strike and, to a lesser extent, at Ferranti with a wave of white-collar unionisation and the blue-collar strike in 1979. What did the move to relatively open conflict reveal about the organised relations of production in these workplaces? A greater role for the state in owning and overseeing arms production consolidated the workplace 'state within the state'. As productivity deals were failing to deliver rising output within production government incomes policies attempted to trade industrial welfare for cheapening the market price of labour. At Rosyth the result was rising worker militancy. At Ferranti, however, the state bail-out initially raised expectations and ushered in a wave of unionisation among white collar workers. State ownership was expected to mark an improved material difference. When this was frustrated by wage controls claims were pursued either constitutionally, which scarce white-collar workers won due to labour market conditions, or through an unsuccessful blue-collar strike.

The social organization of labour - a moral economy of effort

A more ineffable quality pervaded key firms in the arms complex, something which respondents sometimes discussed as a 'service ethos'. This alluded to an unwritten trade-off contained in the employment relation: wages might not be that competitive but job security, benefits, promotion prospects, a relatively comfortable effort bargain, and the cultivation of

occupational, site, locality, and firm-wide identities helped to give use value a moral basis. Informal boundaries were policed vigilantly, with any contravention certain to bring a stinging response. This may be termed, following EP Thompson (1971; 1993: 259-351), a 'moral economy of effort'.[13] To talk about 'a moral economy' in this sense does not imply endorsing as 'good' or virtuous the practical morality of effort. At its most paternalistic and patriarchal it supported a stifling conformity and legitimised a fossilised gender division of labour. On the other hand, in the absence of local control over key bargaining issues, the moral economy of effort was the pivot around which the relative strengths of management and labour contended.

Analysis of the moral economy of effort can begin with Baldamus (1961). Baldamus turned the then (and resurgent) orthodox concern with labour markets and the ill-defined notion of 'efficiency' on its head. Instead the focus was placed on the administrative process of managerial controls over labour effort. A relationship between wages and effort was posited analytically in two ways. First, the relation of effort to wages could be maintained by constructing and reproducing administrative controls founded upon effort value stability. Secondly, and more relevant to a discussion of restructuring, labour effort is raised to an already given wage level by means of intensity control. Stability controls are thus based on custom and practice of prevailing standards of effort. Intensity controls are founded on administrative judgments which articulate expectations of a 'right' level of effort. Administrative controls attempt to harness existing deep-rooted obligations to work in society and, more pertinently, the ways in which effort values become standardised according to their relationship to earnings. As Baldamus puts it, 'This standardization of effort values, then, is the institutional basis that so effectively facilitates predictability and control of the wage earner's effort. It reveals a strange world of intricately mixed, highly organized, and yet morally compulsive expectations ...' (125).

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[13] Thompson (1993: 340) described the moral economy of the Eighteenth century crowd as 'a tissue of customs and wages until they are threatened by monetary rationalizations and are made 'self-conscious *as* a "moral economy". In this sense, the moral economy is summoned into being in resistance to the economy of the "free market".' Although Thompson warns against over-extending its usage, the idea of a moral economy of the workplace clearly has some relevance, particularly where the 'tissue' of workplace life is threatened by restructuring. Implicitly, the moral economy in the sense developed above can be regarded as 'continuously regenerating itself as anti-capitalist critique, as a resistance movement' (Thompson, 1993: 342).

Where the level of administrative effort values shifts under the impetus of the external social, economic or political environments, wages and effort expectations held by labour also shift. Due to their greater structural and relatively unified powers employers are positioned to reap advantages due to intensification controls. Advantages accrue where wage-effort disparities are created at a given margin, not wide enough to provoke instability in the production process but sufficiently wide for capital to benefit from lowered effort values. Labour, in contrast, have an interest in re-establishing wage-effort parity at higher effort values.

Where intensity controls usurp stability controls during rapid industrial re-organization marginal effort values become fluid and variable. Variability in effort values is, however, not simply a function internal to the management of a particular workplace, as Baldamus seems to suggest. Variability is contingent on a wider political economy, nature of the sector, spatial divisions of labour and the labour process. Besides the narrowly bounded conception of effort values three further problems exist with Baldamus' approach. First, intensity of effort cannot be divorced from the social organization of work. Considerable physical exertion may be expended during working time but with poor work organization it may greatly exceed comparable times performed elsewhere. Second, labour tends to be treated as an undifferentiated unified agent with a skewed focus on hierarchical control over horizontal competition and collaboration. 'Crucial and unsolved problems of industrial organization and disorganization are connected *only* with employer-employee relations' (ibid. 9, my emphasis). Even within the same workplace labour does not face capital as an already formed homogenous agent. Third, Baldamus concentrates on what he calls 'employment' costs as distinct from 'occupational' costs. The latter is expressed in inherently determinate skill differentials leading to essentially harmonious, stable and co-operative effects (ibid. 10). It is variation in the distribution of effort and compensation which leads to recurrent disorganization and conflict. Employment costs, expressed as compensation for 'effort', cannot be so easily defined or measured. With the post-Braverman focus on skill and the flexibility onslaught of employers it has become clear that skill differentials are not merely unmediated reflections of experience, training and education. Skill is socially, politically and culturally constructed and contested. In short, 'skill' is a source of conflict in ways in which Baldamus precludes, as the following example from Rosyth shows.

As late as the mid-1980s, 'semi-skilled' machinists were being trained and employed within the Mechanical factory at Rosyth to set-up and operate automatic turret lathes. Having their

roots in the wartime concession to use 'diluttee' labour, machinists were subject to strict negative demarcation controls by craft unions. Only time-served fitter/turners could work certain machines, centre lathes and horizontal boring machines, fitted with a leadscrew for cutting screw threads with a single point tool. Yet this forty year demarcation and corresponding, albeit slight, wage differential could not have been the sole result of the 'occupational costs' of training and experience since machinists underwent four years training in all non-craft areas of workshop machinery. Dockyard-trained craft fitter/turners, in contrast, spent only the briefest phase of their apprenticeship in the machine shop since they were mainly pre-occupied with acquiring the skills for mechanical fitting. Craft and non-craft workers within the machine shop were thus divided despite the nominal unity implied by both belonging to the engineering union. Far from being a straightforward technical division which could be overcome by some further training for machinists to operate a leadscrew, fitter/turners put craft loyalty above workplace unity. Access to these machines was reserved for nationally-recognised indentured members of the craft and trained 'dilutee' workers, who daily worked only a few feet away, were systematically excluded.[14] This was not based on some easily measurable amount of skill content leading to labour unity as Baldamus assumes. Instead, negative demarcations were increasingly contested, both informally and formally, by machinists, and only latterly management, leading to intra-labour friction and division until machinist training was recognised, albeit reluctantly, as a craft credential in 1985. This was not about normatively bringing reward and effort into line but rather the ways in which the external labour market for craft workers was regulated by the internal labour controls and the internal state to secure certain combinations of labour through negotiated concessions on training and upgrading.

As the Rosyth example shows, Baldamus' assumptions about an exclusive focus on employment relations internal to an organization between employer-employee as the sole source of 'disorganization' is far too one-sided. In challenging consensual assumptions of harmonious work relations and therefore 'dysfunctional' conflict Baldamus simply assumes conflict as expressing underlying structures of differentiated power without denoting the historical specificity of the capitalist labour process (Burawoy, 1979:12). Nevertheless, Baldamus properly draws attention to important features of organizational restructuring,

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[14] Craft workers felt their skills to be more generic than machinists, who were trained on an eclectic assemblage of machines, and in resisting management control over the deployment of labour kept open employment opportunities for outside unemployed workers in the trade.

above all the ways in which effort-value disparity is created and maintained. To make the most of this insight requires deepening and rounding it by returning to indeterminacy in the employment contract and the actual use made of labour in the employment relation.

The social organization of labour - desubordination and insubordination

At the further risk of compounding the formalism of the dual nature of labour, as value and utility, two consequences emerge for labour resistance. These can be called labour insubordination and desubordination (Milliband, 1978). Together they mark a limiting point to restructuring as a project to more fully subordinate living labour. *Insubordination* can be taken to refer to forms of non-submission, dissent and protest against the terms and conditions of the exchange under which labour is employed by capital; what may be termed the 'market' definition of the employment relation. These are the ways in which labour's *formal subordination* to the terms of the employment relation, its exchange value, is itself contested through strategies of disruption, strikes, work-to-rules, overtime bans and so on. *Desubordination* refers to the internal resistance of labour to its consumption by capital; what may be termed the 'production' definition. These are the ways in which labour's policed access to and possession of the instruments of production, its use value, enable labour to creatively render its *real subordination* to the managerial imperative incomplete *within* the terms of the employment relation.

Desubordination can be taken to refer to labour's ongoing part in jointly making and reproducing tacitly, informally and culturally a definite but ultimately indeterminate effort bargain over the work process. Insubordination meanwhile is closer to more traditional concerns within the misnamed field of 'industrial relations' (Hyman, 1989), where workers embark upon open collective action in support of an always temporary refusal to accept the explicit terms of the employment relation. This is to say little of how asymmetrical relations of dependency and autonomy in the restructuring process interact dynamically. Clearly, labour insubordination and desubordination do not weigh equally as forms of resistance. Desubordination, for example play, gossip and other kinds of 'consumatory' sociability for its own sake (Roy, 1960), may cause problems of discontinuity, time porosity or undermine supervisory authority in subordinating labour. But insofar as these are the actions of atomised workers the distinctive power of labour as shared class identity and collective agency is diminished. As Karsh (1958: 6, cited by Hyman, 1989: 111) put it: 'unrest is not social until it is organized'. For intentionally-directed collective action some form of

organization is required, enduring over time through established procedures and structures. Only the regularised practices of collective agents in the pursuit of shared goals exhibit organizational capacities.

This is not to discount weaker, relatively decollectivised forms of resistance. These are never entirely spontaneous anyway since some agents need to agree, however tacitly and informally, to accept and act on certain assumptions, formulated previously. It merely points up their limited efficacy in resisting the more centralised power held by capitalist sovereignty over the means of production. Nevertheless, on occasions where desubordination practices take less atomised forms, such as output restrictions, 'organised time wasting' and workgroup cultures, they can become deep, almost invisible, reservoirs of day to day strength. Sullen resentment, game playing and sheer bloodymindedness as stores of resistance may prove difficult for the remote controls of capital to penetrate or even detect, especially when on the surface labour appears subdued and subject to figurative manipulation. At Rosyth workers faced the empirical fact of commercial management after a fierce and lengthy struggle and at Ferranti GEC's centralised power prevailed through the 1993 one-day strikes. In these workplaces labour despondency, demoralisation and fatalism seemed to predominate in the face of the greater concentrated force of management.

In practice there is no rigid divide between de- and in-subordination. Tacit recalcitrance within the labour process often hardens into outright, albeit momentary, rejection of the terms of the wage relation. Blocking-off formal expressions of worker grievances can lead to unpredicted revolts. In the first three years under GEC, for example, the ballot for strike action by Ferranti workers was lost by increasingly smaller majorities until 1993, when GEC arrogance enabled an embedded group of workplace militants to give expression to simmering resentment leading to strike action. Conversely, it is well known that when worker grievances fail to find institutional expression strategies of de-subordination such as sabotage, informal work norms, gossip, absenteeism, labour turnover, withdrawal of consent, and various other kinds of 'misbehaviour' and profane cultures are played out (Thompson and Ackroyd, 1995; Edwards, et al, 1995). Gramsci (1971: 336-7, emphasis added) argues that even when the initiative is lost and 'the struggle comes to be identified with a series of defeats' fatalism can itself become

> a tremendous force of moral resistance, of cohesion and of patient and obstinate perseverance ... Indeed, one should emphasise how fatalism is nothing other than the clothing worn by real and active will when in a weak position ... [since] *some part of even a subaltern is always directive and responsible'.*

In contrast, where bargaining arrangements codify what was previously seen as custom and practice any future contestation of their terms shifts from de- to insubordination. Moreover, resistance to subordination is always contingent upon the ways in which labour's organizational capacities reciprocally interact with the wider political economy, labour movement, management and state strategies, product sector, firm size, geographical location and technical change.

Workers' organizations dialogically engage in 'collective problem-solving activity' through the practical self-evaluation of organizational capacities and goals and of those of their antagonists. Organizational capacities are developed within the densely-woven fabric of daily experience and practices which inform and are informed by contending ideologies and politics. As Barker (1986: 86) put it, this is 'not merely a matter of a simple clash of already developed forces, but is a complex intellectual and affective process. Ideas and aspirations, confidence and fear, clarity and determination all play a critical part in the development of contending movements'. Capital's dependency on indeterminate labour power always permits living labour some degree of autonomy for contention. Resistance cannot be pathologised as the random acts of maladjusted workers. Instead, as rational and partial refusals of exploitation and domination, however inconspicuous, resistance takes the dual form of labour insubordination and desubordination. Such tensions are always present within capitalist production. During restructuring they are simply made more explicit.

This way of accounting for resistance avoids the formalism of theories based on cost-benefit analysis such as the resource mobilization approach (Baldamus, 1961; Olson, 1965). Where likely costs of action are low and incentives high collective action will have wide appeal. Conversely where costs are high or incentives low action is likely to be foregone. The problems identified earlier with structuration theory re-surface here. While rational evaluation on the part of agents is allowed for, agency is confined to a narrow instrumental conception of motivation, taking hold of external media to prosecute ends, with action always initiated by strong, calculating evaluators. In the example of blackings at Rosyth during the anti-privatization campaign, for instance, the costs of insubordination were potentially high,

suspension leading to more severe charges, possibly dismissal, while the vague threat of privatization was a seemingly low incentive. The active mediation of shop steward's organisation was critical to turning the indeterminacy of the employment relation into an explicit, collectively-felt refusal of the managerial prerogative.

In other words, labour identity and opposition gets formed through organizational praxis. Here the interaction of the traditional organizational capacities of antagonists and the degree of variation in the ideological and psychological dispositions of individuals within organizations shape how interests are perceived and the willingness to act on them. Following suggestions by Barker (1996), three dimensions to organisational capacities can be outlined. First, 'self-identity', or what Barker calls *'we-for-ourselves'*, the lived experience and internal self-understanding of an organization. Second, 'self-other', or *'we-for-them'*, the lived experience and practical achievements in opposition to what is outside and against an organization. Finally, 'other-identity', *'them-for-us'*, as the theoretical understanding and comprehension of how the antagonist functions, 'their motives and intentions, their powers and capacities, their unity and division, their inevitability and eternity or mere temporality' (1996: 25). Each dimension mutually conditions the others. Since shop stewards occupy a strategic position of mediation between union members, full-time union officials and management, they embody the general contradiction of self-organising to counter the concentrated force of capital. Generally speaking, this is done within a self-limiting praxis.

To the typology of organisational capacities Darlington's (1993; 1992) three-fold framework for understanding the detail of workplace unionism can be adapted. First, corresponding to 'self-identity', shop steward's relationship to members is characterised by a tension between democracy and bureaucracy. The democratic face-to-face relationship of stewards to those they immediately represent, their 'high-presence availability' if you like, is tempered by the bureaucratisation of steward's organization, as senior stewards and conveners begin to organise administratively at a spatial and temporal remove from the shopfloor. Second, roughly corresponding to 'self-other', are shop steward relationships to full-time union officers, who mediate the formal relationship to management, characterised by independence and dependence. As professionally-employed mediators full-time officers acquire distinct material privileges, enhanced earnings and working conditions, and have a 'low-presence availability' for union members which stewards must fill. Third, 'other-identity' corresponds to steward relations to management, characterised by conflict and accommodation. Here

contradictory pressures are greatest, in normal conditions resulting in a self-limiting praxis of collective bargaining. The problem for dialogical associations within the changed conditions of restructuring is how to transcend the self-limiting capacities of dependency, bureaucracy and accommodation. Open-endedness to the question of resistance and compliance marks any process of restructuring. It is clearly more difficult to marshal and mobilize dialogical organization than monological. Antagonists' three-fold self-understandings are thus conditioned by the relative ease of self-organization.

This framework for understanding the relation between organizational capacities and resistance can be illustrated by the formation of union opposition to contractorisation at Rosyth and for combating aggressive management at GEC. While the costs of contractorisation at Rosyth were expected to be high in the form of redundancy, loss of benefit packages and work intensification, the incentive to act was also high. Worker grievances and action could be directed at three antagonists simultaneously, a dockyard management perceived as inept, prospective contractors perceived as voracious incomers and a politically hostile Conservative government. Added to this was the affective drama of the 1984 miner's strike unfolding nationally and proximately in the Fife coalfields. Demands for increased democratic control of the anti-privatization campaign by shop stewards at Rosyth were repeatedly deflected by local and national union officials. Individual militants tried and failed to develop a counter-network within and without the institutional apparatus bestowed on the official leadership. Bureaucratic union structures and dependency on a centralised, national leadership meant that despite a heightened sense of 'other-identity' and a propensity to militant de- and insubordination weak democratic and independent capacities obscured where the limits to resistance lay.

The legacy of organizational elitism among local conveners and officials, their 'low-presence availability' to the members, later found a natural home in Babcock's industrial relations system around the pseudo-democratic phrase-mongering of HRM 'mutuality', 'togetherness', 'consultation', 'communication', 'change'.[15] Yet it was the degree of militancy demonstrated

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[15] There are parallels here to realist theory in international relations. The ritualised (realist) invocations of cooperation, collaboration and compromise in HRM theory as the necessary counter-weights to conflict, opposition and resistance are refusals to examine how power is situated within the relations of production and instead focus exclusively on the unexamined exercise of it. For instance, imagine attributing conflict, opposition and resistance to capital exclusively and that any

by shop stewards and members that enacted a reality for Babcock and the MOD of having to defuse collective hostility and win workforce compliance. Only the high profitability of MOD work permitted an initially indulgent strategy for securing worker compliance. By the time that world-historic events in the USSR and its satellites altered things after 1990, the depressive effect of the Babcock-union honeymoon on oppositional capacities at the expense of pragmatism, accommodation and elitism had enacted a new reality of passive fatalism among shop stewards and members. Having lost on the empirical fact of contractorisation full-time workplace conveners settled initially for a new, 'professionalised' role in 'working together', and later, after surrendering on anomalies and ambiguities in the formal employment relation and accepting the rhetorical force of management efficiency and competitiveness claims under the accountancy paradigm, saw their 'other-identity' fade as a recalcitrant factor of reality confronting management.

So what is the nature of union adaptation? Kelly (1996) sets out a typology for assessing the aims, means and effectiveness of militant or moderate workplace organization. This has five dimensions: goals, methods, institutional resources, membership resources and ideology. On the one hand, moderation means concessionary *accommodation* with management as a goal; *subordination* of union regulation to the operation of non-bargaining institutions; *demobilisation* of membership and dependency on the goodwill of external bodies such as employers, state and law; a passive *quiescence*, eschewing the use of industrial action, and *incorporation* through an ideology of partnership over antagonistic interests with employers. On these formal counts union organization at Rosyth has moved away from the militancy of the 1980s, that is, the defence and extension of the interests of labour over state employers through the frequent recourse to industrial action, to one of restrained moderation and partnership. Yet the picture is not black and white enough to be plotted typologically. While accommodation, subordination, demobilisation, quiescence and incorporation do represent indicators of change, the pragmatic nature of the 'compromise with reality' suggests that partnership is strongly conditional and that the weakening of these pre-conditions, say mass compulsory redundancy or an open employer offensive on pay and conditions, could see workplace renewal in which all the old tensions would break water quickly and forcefully.[16]

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dissension on its part should be enrolled behind a new consensus based on a new partnership and consultation defined entirely by organised labour.

[16] As mentioned earlier in chapter 12, one indication that this is coming onto the horizon at Rosyth is the appointment in June 1997 of the former Managing Director of GEC-Yarrow, Murray Easton,

Where organizational capacities come up against a reality which seems harsh and unyielding, pragmatic compromise, however reluctantly undertaken, will seem to offer better prospects for organizational survival even if initial goals need to be surrendered or modified. At the time of GEC's offensive on pay and conditions pragmatic adaptation informed the outlook of senior shop stewards at Ferranti. This was contested by a smaller but significant group of union militants who argued that GEC would be vulnerable to collective action. The latter group actively energised the practical evaluation process and succeeded in winning majority workforce support for open insubordination in the form of weekly one-day strikes. Again a strong 'other-identity', GEC's belligerent hostility to trade unions at Edinburgh, was evident. Furthermore, a strong 'self-identity', centred on the Crewe Toll site, was developed. In the process of preparing, acting and reflecting, the affective nature of collective action was spread to further sites, groups and individuals. GEC, in contrast, were temporarily incapacitated and demonstrably unsure how to respond. In time, GEC's own practical evaluation process tended towards a zero-sum solution with the preparation of mass dismissal notices. Collective action, which had required a demanding initial phase of persuasive argumentation to generate, created a new situation favourable to enlarging militant organizational capacities. In short, collective action within the dynamics of organizational praxis enacted a new reality. As the dispute approached zero-sum proportions, however, labour disunion across the city-wide sites afforded trade union officials sufficient ideological space to prepare and acquire consent to demobilize. Thus the existing repertoires for militant collective action were too weakly developed to be sustained against those of an intransigent antagonist and the 'self-other' dependency on the pragmatic mediation authority of the trade union bureaucracy. As an exercise in practical evaluation labour's capacity to self-organise was badly damaged, its collective energy dispersed and the harsh and unyielding reality of GEC despotism confirmed. Where short term prospects for further insubordination were dimmed, abrasive management triumphalism guaranteed resistance in the much lower register of worker desubordination.

So in the one case, Rosyth, militant collective action framed an accommodating response by the new management while in the other case, Ferranti, moderate pragmatic adaptation framed an aggressive management offensive. These were conditioned by wider contextual factors of

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as Managing Director at Babcock, identified as a source of employer militancy in restructuring the

where and how the respective firms were located within a restructuring of the political economy of a military state capital complex in terms of profitability, product markets and corporate systems, and of existing and emergent organizational capacities of capital and labour. At GEC a 'them-for-us' dread settled upon the trade union mediators. At Rosyth 'them-for-us' concerns were held initially by the MOD and the contractors. Despite efforts to re-construct the 'self-identity' and 'self-other' dimensions on a more militant basis, internal challenges to the traditional leaders and established procedures could not be sustained at either Rosyth or Ferranti.

A sense of the invincibility of an antagonist such as GEC or the vulnerability of, say, the MOD to collective action will be mirrored in organizational self-understanding and practice. At the same time the self-perception of organizational limitations or boundedness will confine action to within certain parameters. And yet excitement generated by acts of resistance or demoralization by acts of passivity sometimes open up unexpected vistas of possibility to hitherto passive agents or constrain hitherto active agents. The excitement and enthusiasms generated by collective action itself has an affective character in developing emergent forces.

Within existing organizations, however, militants come directly into conflict with the pre-existing authoritative resources of the bureaucratic layer of full-time officials (Kelly, 1988; Cliff and Gluckstein, 1986; Hyman, 1972). Union officials are Janus-faced, mediating between members and employers, and committed to preserving organizational life through the routines of procedure and bargaining accommodation. The already secure institutional implantation of union officials endows them with certain advantages in expressing the contradiction between the dialogical organization of labour and the monological organization of capital in that '... they possess resources, they are known, they can make various claims to loyalty, their representational mechanisms provide a bridge between the most militant and the less militant within the same movement' (Barker, 1996: 27). At Rosyth, union conveners remained in thrall to the centralised authority of national negotiators in preparing anti-commercial management strategies. Decades of bureaucratic dependency on national officials pressed down on the conveners to both encourage and depress local initiatives within tightly circumscribed limits set nationally. Sections of the shop steward's organization took official oppositional rhetoric as legitimating disruptive tactics. Yet nationally this was always seen as

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Glasgow warshipbuilders during the 1980s and 1990s (McKinlay and Taylor, 1994).

subordinate to building broad cross-class alliances and lobby politics. At Ferranti, unlike Rosyth, worker insubordination was built from the bottom up by a layer of militant shop stewards in their immediate constituencies and on the shop steward committees. Incentives to act were high, given GEC management's belligerent posture, but the costs also seemed to be daunting. Senior stewards tended to accept GEC's invulnerability more fatalistically than younger, more active stewards, although this varied by site and section. After looking into the abyss of GEC threats of mass dismissal notices, local officials and senior stewards managed to secure an end to strike action by dividing striking workers by grade and site, with the lingering after effect of deepened disunion and a rift between official union organisation and their worker constituencies.

Collective action, or its latent threat, is the source of trade union power. Such powers are ultimately conferred only to the extent that inclusive organization, identity and action compels capital to abandon any claim to unilaterally define the employment relation. The creation, maintenance and erosion of labour collectivities are determined by their life-histories of organising. In the phase of an organisation's basic accumulation of members and resources the imparting of its core identity is highly contingent upon the general conditions established by wider political and economic forces. This much was evident in the management/labour clashes at Rosyth and Ferranti during and after the Second World War. Even though the state sought to introduce participatory workplace practices these were resisted by a dockyard management imbued with the outlook of the naval officer caste and at Ferranti by dynastic owners hostile to interference by organised labour.

Once collective bargaining became institutionalised unions in these firms employed a repertoire of coercion, threat, negotiation and agreement. Institutionalisation meant a dual role for union officials. On the one hand, latent collectivities must be able to become manifest as the ultimate display of labours' self-organization. In this union power is always precarious. On the other hand, where collective action does become manifest in the form of strikes, overtime bans, boycotts, and so on, union leaders must be able to restore social order and peace. Clearly, this is what both the dockyard unions and management failed to do after the strike at Rosyth in 1972, with discontent rumbling on into the early 1980s. In contrast, harmonious bargaining was restored jointly between management and unions at Ferranti after the manual workers' strike in 1979, which only reinforced the fallacy of disruptive action in the eyes of union officials. In such situations bargaining normality can be extended by

winning support from non-labour sources. From employers such support exists as recognition, facilities and procedural agreements; from the state, legal protection and a policy of respecting voluntary bargaining between employers and unions (Brenner, 1985; Offe and Wiesenthal, 1980; Kelly, 1988). In the arms industry political bargaining for contracts affords unions a supportive, lobbying role to secure jobs locally. As Galbraith (1967: 278-9) noted for the US 'technostructure',

> In seeking [defence] contracts, the technostructure cannot publicly plead the pressure of its own convenience, necessity or earnings. But it can with more decency plead the adverse effect of contract termination, or failure to win renewal, or denial of a new contract on its workers or the community. Here the union can be a valuable seconding voice.

Organisational reproduction relies on union members maintaining their access to the means of production which can, say over ECR90 radar for Ferranti or Trident at Rosyth, sanction trans-class partnership claims over class struggle oppositional ones. Alliances with the employer make rational sense where use value assumes an overriding concern for labour. But, as argued above in terms of the resource mobilisation model, this is an insufficient guide to action. Use value does not exist in isolation from exchange, and neither exist apart from subordination and its discontents, de- and insubordination. Here it is instructive to consider one form of the argument that labour is a willing accomplice in its own restructuring when under the guidance of an enlightened management team. This will put into relief the distinctive interpretation of capital-labour restructuring advanced above.

Restructuring the 'human resource'

The orthodox, uncritical reporting of top-down accounts of HRM strategies at Rosyth undertaken by Gennard and Kelly (1991; 1992; Kelly and Gennard, 1996) represents a clear case of blindness to asymmetrical power within the capitalist employment relation. Their analysis of restructuring of employment relations at Rosyth fits well Thompson and Ackroyd's (1995: 620) critique of recent industrial sociology where the 'overall theme is that the removal of [worker] misbehaviour is evidence for the success of a totalizing project of regulation which is at work in corporations and society'. Management claims for a new, participatory and inclusive workplace culture are taken at face value (Legge, 1997). The voice and standpoint of labour is emptied out of the process of industrial change, with socio-technical systems of management regulation assumed to have both an a priori legitimacy and

a comprehensive effectiveness in incorporating labour. While for their earlier studies covering the 'honeymoon' period, 1987 to 1990, union conveners were interviewed, by 1996 only the authoritative voice of management is heard any longer. Much of what they report supports the empirical material covered here in Chapters 5 and 6, with some relatively minor factual errors and interpretive disagreements. However, in common with much HRM, business and management theory it is cast as anodyne and 'value-free', disinterested in anything save organizational efficiency. Their technologist methodology and presentation, however, betray symbolically what Gouldner (1969) named the Minotaur in sociology, that half-man, half-beast dualism of timorous professional autonomy coupled with estranged dependencies on the powerful. The academic resolution of fundamental antagonisms and conflicts issues in pragmatic compromise and political quiescence with a critical stance debarred.[17] With some notable exceptions (Legge, 1992; Storey, 1995; Martinez-Lucio and Weston, 1992; Kelly 1996) academic HRM discourses serve to smother critical reasoning and obscure more fundamental processes and struggles. Here, by way of winding up the analytical dimensions of restructuring and move beyond the pre-dominant one-sidedness, I will confine myself to just a few areas from Kelly and Gennard's (1996) later study of Rosyth to make key objections evident.

Kelly and Gennard's basic claim is that within a heavily unionised environment commercial managers introduced a programme of change in working practices, training and decentralised bargaining which has succeeded in enrolling workers to break willingly from inherited Civil Service conditions, standardised employment relations and traditional forms of craft-based work organization. Not surprisingly, workers, shop stewards and even some managers are less sanguine then Gennard and Kelly. Although basing themselves on one of the same workplaces as this study Gennard and Kelly arrive at very different conclusions. Throughout their analysis an uncritical stance is taken towards the self-images held by the commercial managers, frequently employing similarly neutral-sounding business rhetoric[18] and celebrating the pseudo-democratic claims for worker participation and collaboration.

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[17] Gouldner (1969: 612) notes that this higher professional good in deflecting social criticism often conceals the special defence of some private interest, however unwittingly, 'Persuade all that no one must bell the cat, then none of the mice need feel like a rat'.

[18] A typical example of Gennard and Kelly's use of pseudo-objective business jargon, which could have been lifted directly from Babcock's own publicity literature, is 'This proactive business strategy of growing the business through product diversification and cost reduction was based on producing high-quality products which provided a high added value on a low volume of output' (1996: 437).

For Kelly and Gennard (1996:432) the application of HRM policies at Rosyth carried an air of necessity, designed to realise 'business strategy and objectives', 'to secure organizational survival and growth through increased competitiveness'. The problems associated with treating firm strategy as a coherent response to external stimuli instead of flawed choices towards ameliorating the contradictions of organising production for accumulation are noticeably absent from their account. For them the contribution made by HRM at Rosyth, 'designed to achieve cost reduction through the achievement of a smaller workforce', is unproblematically given as: 'a more efficient use of labour, a reduction in the loss of working time from absence, grievance and industrial disputes, and so on, the stricter control of overtime working, a change in shift patterns and record systems and an increasing focus on management development through team-building techniques' (1996: 438). In this a greater use of functional rather than numerical flexibility is reported.[19] Craft workers' jobs have been 'widened' by taking on additional craft and non-craft duties, 'with little or no resistance from the various manual trades' (1996: 440). The assertion of managerial authority to act and for subordinates to follow and assent through enhanced communications, 'flexibilities' and empowerment rhetoric simply assumes that control is a managerial gift over the employment relation to be handed out at its discretion (Fairbrother, 1994). None of the myriad forms of micro-politics which mediate task-widening on the shopfloor nor the severe spatial and time (let alone economic) limitations for functional flexibility in warship refitting, as reported by workers, shop stewards and managers in this study, are discussed by Kelly and Gennard.

Kelly and Gennard (1996: 442) find the concept of 'employability' especially praiseworthy. 'Employability', 'depended on employees being willing to learn new and updated skills so

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This simply means that Babcock focused non-naval profitable opportunities using skilled dockyard labour available at low cost. Even though this 'strategy' remained subordinate to highly profitable naval work it allowed both the Navy and the contractor to opportunistically drive labour costs down.

[19] However, later on Kelly and Gennard admit, without further comment, a central role for numerical flexibility. 'A reduction in labour costs, however, has been achieved by employing sub-contractors on site to complete work which otherwise might have been undertaken by the Dockyard's own labour force. This has also had a learning effect in that Dockyard employees have seen at first hand that employees with the same skills as theirs are employed by companies in competition with the Dockyard on inferior terms and conditions of employment' (1996:441). Again a management perspective is simply assumed. Sub-contract firms and labour have been used to displace 'core' labour. But even though direct contact with sub-contractors increased it did not have a straightforward 'learning' or 'disciplining' effect. Instead, dockyard workers could become even more determined to defend jobs and conditions, especially pay and benefits. Many respondents contrasted

that they could secure work both inside the Dockyard and outside, should they have to leave. In this way internal dockyard functional flexibility is extended to encompass the external labour market', and within the yard,

> 'Employability' opens up the opportunity for workers to gain access to craft and supervisory jobs previously denied to them because they did not serve an indentured apprenticeship at the appropriate age or left school too early with inadequate qualifications. In this way employment is to be found by removing the barriers that have previously obstructed certain employees'.

Here Kelly and Gennard celebrate the erosion of craft control and the weakening of craft workers' power over internal work organisation and external labour markets. In any case, the concept of 'employability' as a strategic bargain struck by management with employees after 1990 is vastly overstated. For example, trade union criticisms of the narrow, ad hoc and limited nature of such training as has been provided belies Kelly and Gennard's rosy picture of a mutually acceptable trade-off between the end of lifelong employment and training to enhance non-dockyard 'employability'. Such training as did take place was largely confined to craft workers acquiring 'semi-skilled' tasks such as slinging and the more basic and generic tasks already closely related to particular trade families such as fabrication. Instead of a new world of upward dockyard mobility, where inter-trade training did take place it was at the margins of the highly specialised nature of the skills involved in warship refitting.

By understating the extent of the use and the problems of contract labour on projects like *RFA Sir Bedivere* Kelly and Gennard show a susceptibility to freeze the dynamics of diverse employment relations in time and neglect the qualitative issues surrounding non-standard employment relations. More importantly, the stress in this study on the dual nature of labour means that resistance to restructuring cannot be merely conceived one-dimensionally; functional flexibility is open to many forms of labour desubordination, including penalties of non-specialisation and the inappropriate use of expensively acquired skills on routine tasks. In terms of numerical flexibility, despite their market vulnerability labour insubordination and desubordination remains open to sub-contracted wage labour. For instance, several hundred workers employed on *Sir Bedivere* by a major contractor, Consave, walked out on strike in April 1995 after four workers were dismissed on the spot for being absent from their

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dockyard health and safety standards to the shortcuts taken by 'subbies'. Conversely, sub-contract workers could be affected by the higher dockyard work standards and employment relations.

place of work, quickly winning their reinstatement. Desubordination is also amenable to sub-contract labour with little commitment to any particular workplace contractor, product or process.[20]

In repeating management's stress on 'employability' the dual nature of labour is obscured further. Functional flexibility was not accepted by the unions primarily to bolster ex-dockyard labour in the external labour market but because it was believed that firm survival, hence ongoing access to the means of production and reproduction, depended on it and that core trade identities would be preserved. Likewise the relatively peaceable nature of mass redundancy between 1990 and 1995 owed as much to MoD subsidising the redundancy package and management reluctance to impose compulsory redundancies, save at the margins. All the time this was contingent on the wider state of national politics and industrial relations. With the election of a Labour government in May 1997 Babcock suddenly found itself in a favourable political position with close allies as Minister of Defence and Chancellor of the Exchequer.[21]

There can be no denying a general retreat by unions at Rosyth from positions which once seemed unassailable. One example, also reported by Kelly and Gennard, is that until the early 1990s any change to the labour process which was contested by the unions became subject to a 'status quo' clause in the disputes procedure. No change could be unilaterally imposed and custom and practice took precedence until resolution by negotiation, arbitration at a 'demarcation court' or industrial action. However, this was surrendered by the unions in the early 1990s in a reversal of the status quo to the effect that changes in working practices are put immediately into effect until the disputes procedure becomes exhausted. Management thus appear to have the initiative; action, in the sense of willed outcomes, appears solely within the ambit of management. Kelly and Gennard point to a range of areas where performance has been improved by returning prerogatives of this kind to management. However, they are forced to concede that actually measuring performance in terms of output,

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[20] In the month following the Consave strike rumours of sabotage circulated the dockyard after a leak from a large tank of highly inflammable gas onboard *Sir Bedivere* was discovered which would have killed over a hundred worker had it exploded.

[21] The Chancellor of the Exchequer, Gordon Brown, used the occasion of his first budget, 2 July 1997, to underline Rosyth's new political capital when Babcock apprentices were shown outside Number 11 Downing Street parading the new red Treasury box manufactured at Rosyth to replace the battered Gladstone box. (see also Chapter 11, note 22).

cash or efficiency remains as elusive as ever and that the nature of naval work still demands labour hoarding, hence underemployment, hence subsidies from the MOD.

Why then, if the prerogative had been restored to management, did they not impose more radical restructuring in the early 1990s and sideline the unions? After all, conclude Kelly and Gennard (1996: 450), 'it is too early to judge whether the influence of trade unions has been weakened at Rosyth'. It cannot be simply that external conditions of state subsidy coupled with the relatively marginal forays into other product markets alleviated the need. This, however, is Kelly and Gennard's explanation. Having 'no commercial advantage' in de-recognising or by-passing the unions, management have had no need to become 'aggressive'. What this pre-supposes is management potential to become 'aggressive' remains while its actuality has merely been suspended for the time being. Rather the specific ways in which workplace restructuring at Rosyth mediated the state capital relation depended on judgments about the dual nature of labour, value and utility, and the uncertain politics of declining strategic status within the industrial complex. But, above all, accommodative trade union organisation endured as actuality, while militant organisational potentialities were suspended. Neither the trade unions nor management desired a disorderly restructuring. Both were captivated by the notion of firm autonomy, which was being assailed in the early 1990s by the national political alliance clustered around rival, DML. At this moment of acute danger for workplace survival persuasion, collaboration and consent was needed to keep the Rosyth alliance unified. In Scotland, trade unions meant access to national political representation through Labour MPs and the Scottish lobby coalition. In the workplace, a tougher management regime emerged around an ascendant accountancy paradigm bringing pay freezes, redundancies and a greater use of non-dockyard labour. With workplace survival assured after 1993, the personnel regime shifted yet again to generate collaboration in the run-up to the sale of dockyard assets. Here, bargaining between Babcock and the MOD and Babcock and the unions took place to reduce future redundancy costs for the next phase of workforce cutbacks when the programme of work was planned to taper off after 2002. Thus a series of short term responses based on expediency continually undercut longer term strategic planning for competitive accumulation. In this the politics of state and the politics of production synthesised to enable and constrain firm autonomy.

Much discussion of union responses to HRM is reduced to technical-organizational issues. There is no suggestion that this is not important. Clearly a range of responses are possible,

from wholehearted endorsement to outright rejection. However, this obscures the prior dual nature of labour in restructuring and the continual need for access to the means of (re)production. In cases where absolute membership numbers are falling due to redundancy, organizational survival may result in a pragmatic response. The pragmatism of the Rosyth unions is accounted for by Kelly and Gennard (1996: 451) by a similar strand of environmental adaptationism. 'Like any organization [sic], [Rosyth unions] have seen that survival and continuing influence requires adaptation and a flexible response, not a principled and inflexible ideological stand'. But, to the extent that the politics of production remain separate from the politics of state or only come into relation externally, trade unions are always pragmatic. Where this began to be transcended in the struggle against agency management in the 1980s presumably it represented 'a principled and inflexible stand' in contrast to later pragmatism in the light of strong management agency. Then, the strong sense of labour agency, self-identity, materially altered its environment, conditioning the introduction of contractorisation and subsequent management practices. Yet even here, pragmatism prevailed over militancy, or rather militancy was pragmatic.

Given the potentialities, diversity and variation at each conjuncture in restructuring, the notion of organizational adaptation merely serves every eventuality and outcome rendering any explanatory purchase meaningless. 'Pragmatic adaptationism' suggests a malleable, evolutionary process that always tends towards a final shaping by a greater external force. What is intrinsic to labour's nature under capitalism is hypostatised, with labour organizational praxis merely passed over as a recalcitrant fact needing management attention. Unions are defined as a secondary problem, whose potential for obstruction is to be dealt with by special invitation to address the primary problem of 'competitive efficiency'. Babcock are congratulated for having done this more or less successfully.

What exactly all this means from the point of view of workplace unionism is ignored. In 1988, the second year of the 'honeymoon', craft workers in particular showed a hostility to the emerging managerial regime and the rationalisation of the wage structure when they voted to reject the comprehensive pay and conditions package against union recommendations. Yet, by the early 1990s, that is after 'the honeymoon', craft workers accepted pay freezes. Moreover, the non-industrial union, IPMS, seem to have negotiated restructuring more effectively than industrial unions. IPMS remain committed to defending conditions inherited from the Civil Service and have been less severely affected by the flight from living labour

than industrial unions. Although some functions have been eliminated, such as time recorders, they have been more than compensated by a growing need for technical, market, finance and other functions. That a 'delayering' of non-industrial workers has not proved feasible thus far at Rosyth strengthens white-collar unionism. Non-industrials have also been readier to take industrial action to defend pay and conditions, operating a three week work-to-rule and overtime ban in November 1994.

Finally, at Rosyth there is little evidence of a change of heart from the general, long standing hostility of British management to worker participation in decision-making (Nichols, 1986). What Braverman (1974: 39) identified in the US 'work reform' movement of the 1960s captures well the conflation of modest shifts in management style, and parallel academic concerns with subjectivities and identity construction, with deep-rooted structural change:

> They represent a style of management rather than a genuine change in the position of the worker. They are characterized by a studied pretense of worker 'participation', a gracious liberality in allowing the worker to adjust a machine, replace a light bulb, move from one fractional job to another, and to have the illusion of making decisions by choosing among fixed and limited alternatives designed by a management which deliberately leaves insignificant matters open to choice.

How well this sums up the grandiloquent claims for 'employability' and job enrichment at Rosyth. As Fairbrother (1994: 166, 193) notes, bureaucratically-led Civil Service unions as at Rosyth were 'ciphers for policy from above'. Member passivity was encouraged due to the formal strength of high member density, official recognition, bargaining procedures and confronting a 'model employer'. It may be going too far to argue that restructured work relations pressed unresponsive and centralised labour organisation into 'sad union forms bypassed by history' (Fairbrother, 1994: 193). Nevertheless, the potentiality remains, at Rosyth (and Ferranti) as for public sector unionism 'to rebuild accountable and responsive levels of organisation within structures which do not lend themselves to ready reorganisation'. Despite high labour redundancy and external displacement strategies, in re-commodifying and de-centralising the employment relation its joint creation is brought home closer to the 'hidden abode' of production. Restructuring makes possible a renewal of 'high presence availability' organisational capacities guided by a militant temper.

Chapter 14

Summary conclusion

This thesis set out to understand something of the dynamics of the restructuring process. As a study of two key firms in the defence industry in Scotland it provides good evidence of, first, the historical problems encountered in restructuring core 'strategic' defence sectors, firms and workplaces and, secondly, the strongly mediated character of more recent restructuring. The historical and comparative aspects of the study give due recognition to the contingent and uneven character of restructuring. Evidence presented here undermines accounts which assume uni-linear 'logics' of capital and uniform outcomes, almost always implying a weakening of the position of labour with increased advantages flowing to capital. My findings point to the fact that restructuring is by nature a self-limiting process, confined to re-ordering the basis of existing relations of production. Capitalist accumulation implies a structural dependency on living labour to carry out useful work. This compels capital to limit, indeed repress, its domination over subordinates. So, despite capital's greater structural power, labour's capacity to self-organise and the dependency on living labour frustrate the unilateral will of capital.

Too often studies of industrial change are informed by the assumption that decision-makers, managers and trade union officials hold the key to the 'hidden abode'. Undoubtedly, such people do occupy distinct positions of power. However, the mediated character of restructuring is too subtle to be approached solely through the accents and self-images of leaders. Alternatively, research conducted by students of the 'impact' of industrial change on the working class often assume that workers' resistance and compliance operate like clashing balls on a billiard table. For them the key focus is to observe the moment that the cue ball strikes the passive mass of static balls (labour) forcing them to break in so many directions, falling into pockets (compliance) or rebounding from cushions (resistance) before coming to rest. In the first case, the meanings and activities of subordinates are neglected while, in the second case, (in)actions are viewed as reactive to the superior force of superordinates, themselves acting upon a supposedly objective will-to-restructure. Something of the irreducibly refractory material of human labour, the reciprocity of the employment relation, the incompleteness of the work contract and workers' structural and organisational capacities provides a more rounded sense of the relations between subordinates and superordinates

within the restructuring process. The claim of this study is that in developing a substantive theory, it historicises the mutual conditioning of state, capital and labour and leaves outcomes with some degree of open-endedness.

When firms in the defence industry restructured, weakly after the mid-1980s and more concertedly in the first half of the 1990s, they were guided as much by arbitrary, short-run expedients and opportunism as by 'strategic' and rational management planning. Three main shifts were initiated: job loss, vertical disintegration and time intensification. Reductions in absolute levels of employment occurred in both companies. Shrunken workforces lower base wage costs and create enough slack for introducing 'non-standard' employment relations. Workers are recruited less through traditional avenues and reward packages and increasingly contracted as individual 'casuals' for a set length of time, either from management's own database of ex-employees or brokered through the local Job Centre or through the widespread use of parasitic 'employment agencies' who can supply most forms of labour from general labourers to software engineers. Within the full-time workforce the employment relation was redrawn falteringly around 'functional' flexibilities. Yet the nature of the labour process in warship refitting and military electronics, in part, places technical limits on the application of supposedly generic skills to reintegrate divided labour, although the introduction of 'zone management' at Rosyth clearly intended to use labour more flexibly between tasks. Here, 'employee-centred' discourses exhort workers to more exacting performances, which merely masked how the employment relation was being refocused around a new calculating management gaze.

Job losses, time intensification, flexibilities and vertical disintegration represent alternatives to what Lovering (1990: 464) predicted when he said that managers in defence firms were moving to the 'forefront of the confrontation with organised labour'. As management became pessimistic about future prospects for accumulation the specialised versatility of collective labour power offered capital a temporal suppleness for shifting uncertainty onto living labour. Where management considered that living labour could be avoided it was; where it remained central to valorisation then it could not be so readily displaced from production. In initiating structural change state and capital are compelled to contain risks and uncertainties, above all those concerning living labour, but still tilt the balance of power sufficiently in capital's favour.

Restructuring is therefore an inherently self-limiting and contradictory process. As if caught in the unending panic of a waking nightmare, management find that their repressed domination of living labour cannot be overcome. Instead, self-repression is reinforced by the contradictory dynamic of restructuring; restructuring does not so much bury the dead as breathe life into undead labour, hitherto restfully entombed within the 'hidden abode' of arms production. Living labour is now compelled to wander the world of commodity exchange looking for a purpose within production; dead labour meanwhile arrives at the scene of production as a semi-finished thing.

As this labour is displaced onto the market, within production management become addicted to the idea of simultaneously specialised and versatile labour under their command. Yet capital itself was now to organise its activities as if the monetised authority of the ascendant accountancy paradigm signalled disinterested commands for it to follow. In supplanting the previous technical-administrative paradigm, the monetised values of accountancy offered an illusion of hard and fast fixity and certainty. Standard employment relations, involving relatively secure, full-time work attracting a package of social benefits, would now have less purchase in securing workers to specific work performances. Instead, management decision-making would increasingly call upon the authority of budgets, payment milestones and internal transactions. Allied to weakly developed horizontal 're-integration' within production through functional flexibility, vertical disintegration pushed the technical division of labour outside the firm's boundaries with materials, instruments and semi- and finished components becoming available as commodities through the social division of labour.

Yet the case studies show that for mainline military technology projects, such as warship refitting or advanced radar, more recent shifts to 'competitive' procurement arrangements and 'real' or 'risk' prices are largely fictions. Prices are set by political bargaining and not by some naturalistic, disinterested signal hailing buyers and sellers. That this arbitrary price-setting wilfully seeks reified authority to dominate and discipline living labour might seem an obvious conclusion to draw; that the appeal to this contrived authority can never be finally successful and stands in constant risk of exposure and failure may be less obvious. How far labour is subordinated by the grotesque authority of politically-constructed monetised values depends on the relative combativeness of the antagonists.

The extent of this reciprocity is brought out by the comparative aspects of the thesis. In the case of Ferranti in Edinburgh, the 'strategic' autonomy established by company divisionalisation allowed for continual expansion, accumulation through capital widening, individual advancement through promotional opportunities, paternalistic employment relations, and a self-image for the Scottish division which employed identities of family, nation and technology. Similar accumulation strategies and worker enrolment practices were also evident at Rosyth. As the sole Scottish dockyard within the British naval-industrial complex, the arrival of nuclear submarine refitting in the late 1960s provided a sense of a modernising paternalism at work comparable to that of Ferranti. So, although operating within different sectors, technologies and labour processes, and exhibiting different ownership patterns, similar ideas about standard employment relations, bureaucratic paternalism and a serviceable moral economy of labour prevailed.

When it came to restructuring, however, quite different trajectories were followed. The introduction of commercial management as an organisational form at Rosyth in the mid-1980s was viewed as a radical departure from previous re-organisations. Ten years later it seemed unduly cautious. Only belatedly were dockyard assets handed over to the private managers, Babcock, to manage the gradual rundown of the yard's fixed and variable capital as naval work tapered-off over the next few years. Commercial management was based on a pragmatic judgement made by Conservative Ministers and their advisors, taking into political expectations which correctly anticipated worker hostility and resistance. While this thesis has identified dockyard trade unionism as excessively centralised and bureaucratised, a tradition of workplace activism and, at times, of politically conscious militancy was established at Rosyth during the 1970s. As worker opposition intensified, commercial management seemed to offer an astute compromise solution to dockyard organisational malaise.

In short, politicians, policy makers and managers take prior account of likely worker opposition to restructuring. This is demonstrated, albeit negatively, in the case of Ferranti. In contrast to Rosyth, trade unionism at Ferranti took a more subdued, moderate countenance. The main blue collar union were considered to be a bastion of right wing politics within the engineering union, AEU, on the east coast of Scotland. The first major blue-collar strike at Ferranti happened thirty-six years after Crewe Toll opened and proved an abject failure. But something else was happening at Ferranti. White collar unionism grew in the aftermath of

state bail-out in the mid-1970s on the basis of younger, highly trained and politically left-leaning union activists. By the time of the GEC takeover, the eclipse of blue collar unionism by white collar organisation, MSF, was well advanced. Initially, GEC were able to press its own designs onto a blue collar union organisation badly corroded by bureaucratisation and craftist arrogance. In contrast, white collar shop stewards were taking political initiatives, first exposing the coming ISC scandal before the GEC takeover and, after 1990, actively campaigning for a government-sponsored Diversification Agency to ease the transition to a post-Cold War arms industry. And, in 1993, as GEC revoked standard employment relations, MSF activists galvanised support for a series of strikes against GEC. Again, as at Rosyth, activism was confined to the workplaces directly affected and resistance could not be pushed beyond certain limits enforced by union officials.

Different modalities of struggle at Ferranti and Rosyth, then, conditioned the practices of the respective management teams. Instead of the coercive abrasiveness of GEC, Babcock adopted a more conciliatory, benign, 'employee-centred' approach, underwritten by the guaranteed profits for minimal investment of the Ministry of Defence programme of nuclear work. When this began to be challenged by its sole competitor, DML, and work cancelled as nuclear submarines were paid-off, a harsher management regime operated. Yet, Babcock did not venture nearly as far as GEC in shaking-off the repressed will-to-dominate. Workers' organisational capacities were intact. Although militant action was virtually non-existent and union officials also desired an orderly rundown, confrontation at Rosyth did not lead to a debilitating defeat. Meanwhile, after the strikes in Edinburgh GEC attempted to re-conquer a demoralised workforce. To a greater extent than Babcock, GEC's overriding obsession with monetised values compelled managers to move further in confronting labour. That it seemed to pay-off, at least short term, indicates a weakening of labour's organisational capacities. That a demoralised but indispensable workforce will still resist in the subterranean depths of production to de-subordinate the labour process indicates a potential for future re-organisation.

With cost considerations beginning to more fully define the employment relation many workers could feel cheated. Promises made over the decades of the permanent arms economy about the long-term rewards for loyalty and service in return for foregoing better wage rates being paid in the civilian economy were reneged upon at the same time as the time intensity of the working day was being jacked-up. A 'moral economy of effort', the long established daily

rhythm of alternating occupied and porous working time as against relatively meagre monetary rewards, was disrupted as managements made strenuous efforts to fill-in 'lost' time and re-align more completely the working day with productive activity. A sense of loss and betrayal became evident, that something implicitly known and felt about the employment relation had been battered and belittled, that useful labour began to feel more like used labour. Some workers simply became incredulous that a tolerable moral economy of effort could continue to be justified and defended against the harsher reality of political economy outside the so-called 'islands of prosperity' in the arms industry. The corollary of such fatalism was that restructuring somehow became both inevitable and necessary. These depths can only be plumbed by research interested in the meanings of the dominated and understood within the contradictions contained in the overall relations of production and the circuiting of state capital. It is here that the potential for workers' organisation to resurface is continually reproduced.

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